EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT (EPCRA) OVERVIEW AND PURPOSE

WHY EPCRA?

- Key hazardous chemical releases
  - Bhopal, India (1984)
  - Institute, West Virginia (1985)
- Increased public concern
- Worker right-to-know laws
  - OSHA Hazard Communication Standard (HAZCOM)
- State right-to-know laws

EPCRA OVERVIEW

- **Purpose of Emergency Planning**
  - Protect public health and safety, and the environment
  - Integrate with local emergency planning efforts
- **Purpose of Community Right-to-Know**
  - Increase community awareness of chemical hazards
  - Support and focus state and local planning activities
  - Support chemical accident and pollution prevention initiatives

EPCRA OVERVIEW

- **Summary Chart of EPCRA Requirements for RY 1997 (as of January 1, 1998)**

SECTION	COVERAGE/ TOPIC	REQUIREMENT	RELEVANT CHEMICAL LIST	THRESHOLDS	SUBMIT TO
301-303	Emergency Planning	LEPC Emergency Plan, EHS Notification	356 Extremely Hazardous Substances	Specified Threshold Planning Quantities (TPQ: 1 to 10,000 lbs.)	SERC* LEPC
304	Emergency Notification	Accidental Release Reporting	EHSs and CERCLA §102(a) Substances	Specified Reportable Quantities	SERC* LEPC
311	Hazardous Chemical Inventory	MSDSs or List of Chemicals	OSHA Hazardous Chemicals (No Specific List)	10,000 lbs.; or, if EHS, 500 lbs. or TPQ - whichever is lower	SERC* LEPC Local Fire Dept.
312	Hazardous Chemical Inventory	Inventories, Hazards, and Locations (Tier I or II)	OSHA Hazardous Chemicals (No Specific List)	10,000 lbs.; or, if EHS, 500 lbs. or TPQ - whichever is lower	SERC* LEPC Local Fire Dept.
313	Toxic Chemical Release Reporting	Total Annual Release, Transfer, & Source Reduction & Recycling Data - PPA (Form R)	Approximately 650 Toxic Chemicals and Chemical Categories	25,000 lbs. manufactured or processed; 10,000 lbs. otherwise used	EPA State

* or TERC, 55 FR 30632 (July 26, 1990)

DEFINITION OF "FACILITY"

- "Facility" - "all buildings, equipment, structures, and other stationary items which are located on a single site or contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with, such person). For purposes of section 304, the term includes motor vehicles, rolling stock, and aircraft. " (EPCRA §329(4))

FEDERAL FACILITIES AND EPCRA

- Executive Order (EO) 12856 changes, for the purposes of the Order only, the term "person" as defined in EPCRA to include Federal Agencies
- Requires Federal facilities to comply with EPCRA provisions
- All government-owned, contractor operated (GOCO) facilities are already subject to EPCRA

EPCRA SECTIONS 301 - 303
EMERGENCY PLANNING

EMERGENCY PLANNING REQUIREMENTS (EPCRA SECTIONS 301 - 303)

Section 301:	**Establish State Emergency Response Commissions (SERCs), designate local emergency planning districts, and appoint Local Emergency Planning Committees (LEPCs) for each district**
Section 302:	**Designate extremely hazardous substances (EHSs) and threshold planning quantities and notification requirements for covered facilities**
Section 303:	**Develop local emergency response plans**

EMERGENCY PLANNING INFRASTRUCTURE

- How state and local emergency planning infrastructure is established
  - Governor designates state emergency response commission (SERC) and SERC membership; or Tribal chief executive officer designates tribal emergency response commission (TERC)
  - SERC designates local emergency planning districts within state
  - SERC appoints members of local emergency planning committee (LEPC) for each planning district
    - » Membership includes industry, police department, fire department, elected officials, and the general public

EXTREMELY HAZARDOUS SUBSTANCES (EPCRA SECTION 302)

- Selection criteria are based on acute lethal toxicity
- 356 chemicals currently designated as EHSs
  - Overlap of 138 chemicals with CERCLA hazardous substances
- EPA can revise the list by adding or deleting
- Substances identified in 40 CFR part 355

FACILITY NOTIFICATION REQUIREMENTS (EPCRA SECTION 302)

- Facilities subject to emergency planning requirements
  - Any facility (e.g., warehouses, manufacturers) that:
    - » Has a quantity of EHS present at any one time that meets or exceeds specified threshold planning quantity (TPQ),

      or

    - » Is designated for participation by SERC

EMERGENCY PLANNING REQUIREMENTS (EPCRA SECTIONS 302 - 303)

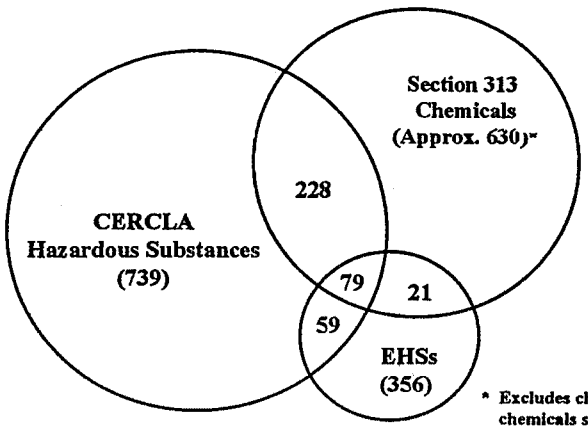
- Planning notification
  - Notify SERC or TERC and LEPC
  - Designate facility emergency coordinator
  - Supply LEPC with planning information, as requested
  - Coordinate emergency response planning with community

EPCRA SECTION 304
EMERGENCY RELEASE NOTIFICATION

EMERGENCY RELEASE NOTIFICATION

- **Releases of EHSs (40 CFR 355) or Hazardous Substances (40 CFR 302.4) in a reportable quantity (RQ)**
  - **RQ set by U.S. EPA through rulemaking**
  - **If RQ not set by EPA, statutory RQ of one pound applies**
  - **RQ is specified quantity released within a rolling 24-hour period**

REGULATED SUBSTANCES



* Excludes chemical categories and chemicals subject to Administrative Stay

EMERGENCY RELEASE NOTIFICATION

- Initial release notification must include:
  - For EPCRA section 304 chemicals & CERCLA section 103 chemicals
    - » SERCs or TERCs of any state or Tribe likely to be affected by release
    - » Emergency coordinators for LEPCs of any area likely to be affected by release
  - For CERCLA section 103 chemicals
    - » National Response Center (NRC)
- Provide immediate notification via telephone, radio, or in person

EMERGENCY RELEASE NOTIFICATION

- The following events do not constitute releases subject to EPCRA section 304 reporting
  - Releases solely within facility boundaries (40 CFR 355.40(a)(1)(i))
  - Releases that are Federally permitted (40 CFR 355.40(a)(1)(ii))
  - Releases of certain metal particles with a diameter of at least 100-micrometer (40 CFR 302.6(D))
  - Releases resulting in exposure to persons solely within the workplace (CERCLA § 101(22)(A))
  - Emissions from motor vehicle engine exhaust (CERCLA § 101(22)(B))

EMERGENCY RELEASE NOTIFICATION

- The following events do not constitute releases under EPCRA section 304 reporting (continued)
  - Releases of source, byproduct, or special nuclear material from a nuclear incident (CERCLA § 101(22)(C))
  - Proper applications of FIFRA-registered pesticides (CERCLA § 103(e))
  - Normal application of fertilizer (CERCLA § 101(22)(D))

EMERGENCY RELEASE NOTIFICATION

- Reduced reporting for continuous releases
  - Initial notification to the SERC, LEPC, and/or NRC
  - Initial written follow-up to SERC, LEPC, and/or EPA regional offices
  - One-time written follow-up report to EPA regional office one year later (for CERCLA hazardous substances only)
  - Subsequent notification of any statistically significant increases or other changes in the release

EMERGENCY RELEASE NOTIFICATION

- Releases that are "continuous" and "stable in quantity and rate"
  - "Continuous"
    - » Occurs without interruption or abatement; or
    - » Is routine, anticipated, intermittent, and incidental to normal operations or treatment processes
  - "Stable in quantity and rate"
    - » Is predictable and regular in amount and rate of emission
- Continuous releases exclude:
  - Accidents
  - System upsets and malfunctions
  - Sudden pressure discharge
  - Statistically predicted upsets

EMERGENCY RELEASE NOTIFICATION

- CERCLA section 103 versus EPCRA section 304

	CERCLA Section 103	EPCRA Section 304
Chemicals Covered	CERCLA hazardous substances (40 CFR 302.4)	CERCLA hazardous substances (40 CFR 302.4) EPCRA Section 302 EHS (Appendix A to 40 CFR 355)
Releases Covered	Any release into the environment	Any release with potential for exposure to persons off-site
Notification Requirements	NRC	LEPC(s) SERC(s) TERC(s)

EPCRA SECTIONS 311 - 312 HAZARDOUS CHEMICAL INVENTORY REPORTING

EPCRA SECTIONS 311 - 312

- Chemical inventory reporting
  - Section 311 - Material Safety Data Sheets (MSDSs)
  - Section 312 - Tier I or Tier II forms

EPCRA SECTIONS 311 - 312

- Regulated facilities
  - Facilities subject to OSHA's HAZCOM (29 CFR 1910.1200)
    - » No specific list of hazardous chemicals
    - » HAZCOM applies to broad categories of chemicals, including any chemical that poses a physical or health hazard

EPCRA SECTIONS 311 - 312

- Regulated chemicals and reporting thresholds
  - 500 pounds or TPQ, whichever is less, for EHSs (include any EHS in a mixture)
  - 10,000 pounds for other OSHA hazardous chemicals
  - Maximum quantity on-site at any one time
    - » Must aggregate EHS quantities present in raw materials and all mixtures

EPCRA SECTIONS 311 - 312

- Submit sections 311 and 312 information to:
  - SERC or TERC
  - LEPC
  - Local fire department

EPCRA SECTIONS 311 - 312

- Reporting for mixtures
  - Report on mixtures as a whole or by hazardous components
  - Choose either reporting method
  - Maintain consistent method for reporting under EPCRA sections 311 and 312

MSDS REPORTING (EPCRA SECTION 311)

- Section 311 reporting requirements
  - Material Safety Data Sheets (MSDSs), or
  - List of hazardous chemicals grouped by EPA's five physical and health hazard categories
    - » Fire
    - » Sudden release of pressure
    - » Reactivity
    - » Immediate (acute)
    - » Delayed (chronic)

MSDS REPORTING (EPCRA SECTION 311)

- Submit original list or copies of MSDSs within 90 days of exceeding reporting thresholds
- Update submission within 90 days of obtaining significant new information

TIER I AND TIER II REPORTING (EPCRA SECTION 312)

- Section 312 reporting requirements
  - Report chemical information by five hazard categories on Tier I form
  - Report chemical-specific information on Tier II form (optional under EPCRA, but required by many states)
  - Submit reports annually on or before March 1 for previous calendar year's activities

Form Approved OMB No. 2050-0072

Revised June 1990

TIER ONE

EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Aggregate Information by Hazard Type

FOR OFFICIAL USE ONLY — ID # — Date Received

Important: Read instructions before completing form

Reporting Period From January 1 to December 31, 19____

Facility Identification

Name _____
Street _____
City _____ County _____ State _____ Zip _____

SIC Code ☐☐ Dun & Brad # ☐☐ - ☐☐☐☐ - ☐☐

Emergency Contacts

Name _____
Title _____
Phone _____
24 Hour Phone _____

Name _____
Title _____
Phone _____
24 Hour Phone _____

☐ Check if information below is identical to the information submitted last year

Owner/Operator

Name _____
Mail Address _____
Phone _____

Hazard Type	*Max Amount**	*Average Daily Amount**	*Number of days On-Site*	*General Location*
Fire	☐☐	☐☐	☐☐☐	
Sudden Release of Pressure	☐☐	☐☐	☐☐☐	
Reactivity	☐☐	☐☐	☐☐☐	
Immediate (acute)	☐☐	☐☐	☐☐☐	
Delayed (Chronic)	☐☐	☐☐	☐☐☐	

☐ *Check if site plan is attached*

Certification (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through _____, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate and complete.

_____
Name and official title of owner/operator OR owner/operator's authorized representative

_____ _____
Signature Date signed

* Reporting Ranges

Range Code	Weight Range in Pounds From ...	To ...
01	0	99
02	100	999
03	1000	9,999
04	10,000	99,999
05	100,000	999,999
06	1,000,000	9,999,999
07	10,000,000	49,999,999
08	50,000,000	99,999,999
09	100,000,000	499,999,999
10	500,000,000	999,999,999
11	1 billion	higher than 1 billion

Revised November 1990

Tier Two

EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Specific Information by Chemical

Facility Identification

Name ____________________
Street ____________________
City ________ County ________ State ______ Zip ______
SIC Code ☐☐☐☐ Dun & Brad Number ☐☐-☐☐☐-☐☐☐☐

FOR OFFICIAL USE ONLY
ID# ____________
Date Received ____________

Owner/Operator Name

Name ____________ Phone (____) ____________
Mail Address ____________________

Emergency Contact

Name ____________ Title ____________
Phone (____) ____________ 24 Hr. Phone (____) ____________

Name ____________ Title ____________
Phone (____) ____________ 24 Hr. Phone (____) ____________

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19____

☐ Check if information below is identical to information submitted last year.

Chemical Description	Physical and Health Hazards (check all that apply)	Inventory	Container Type / Pressure / Temperature	Storage Codes and Locations (Non-Confidential) — *Storage Locations*	Optional
CAS # ☐☐☐☐☐☐-☐☐-☐ Trade Secret ☐ Chem Name ____________ (Check all that apply) ☐ Pure ☐ Mix ☐ Solid ☐ Liquid ☐ Gas ☐ EHS EHS Name ____________	☐ Fire ☐ Sudden Release of Pressure ☐ Reactivity ☐ Immediate (acute) ☐ Delayed (chronic)	☐☐ Max. Daily Amount (code) ☐☐ Avg. Daily Amount (code) ☐☐☐ No. of Days On-Site (days)			☐
CAS # ☐☐☐☐☐☐-☐☐-☐ Trade Secret ☐ Chem Name ____________ (Check all that apply) ☐ Pure ☐ Mix ☐ Solid ☐ Liquid ☐ Gas ☐ EHS EHS Name ____________	☐ Fire ☐ Sudden Release of Pressure ☐ Reactivity ☐ Immediate (acute) ☐ Delayed (chronic)	☐☐ Max. Daily Amount (code) ☐☐ Avg. Daily Amount (code) ☐☐☐ No. of Days On-Site (days)			☐
CAS # ☐☐☐☐☐☐-☐☐-☐ Trade Secret ☐ Chem Name ____________ (Check all that apply) ☐ Pure ☐ Mix ☐ Solid ☐ Liquid ☐ Gas ☐ EHS EHS Name ____________	☐ Fire ☐ Sudden Release of Pressure ☐ Reactivity ☐ Immediate (acute) ☐ Delayed (chronic)	☐☐ Max. Daily Amount (code) ☐☐ Avg. Daily Amount (code) ☐☐☐ No. of Days On-Site (days)			☐

Certification **(Read and sign after completing all sections)**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through ________, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete

Name and official title of owner/operator OR owner/operator's authorized representative ____________ Signature ____________ Date Signed ____________

Optional Attachments

☐ I have attached a site plan
☐ I have attached a list of site coordinate abbreviations
☐ I have attached a description of ____ and other safeguard measures

Tier Two

EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Specific Information by Chemical

Facility Identification

Name _____
Street _____
City _____ County _____ State _____ Zip _____

SIC Code ☐☐☐☐ Dun & Brad Number ☐☐ ☐☐☐ ☐☐☐☐

FOR OFFICIAL USE ONLY
ID# _____
Date Received _____

Owner/Operator Name

Name _____ Phone _____
Mail Address _____

Emergency Contact

Name _____ Title _____
Phone _____ 24 Hr. Phone _____

Name _____ Title _____
Phone _____ 24 Hr. Phone _____

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19____

☐ Check if information below is identical to information submitted last year

Confidential Location Information Sheet

CAS #	Chem Name	Container Type	Pressure	Temperature	Storage Codes and Locations (Confidential) *Storage Locations*	Optional
☐☐☐☐☐☐	☐☐ ☐	☐☐☐				☐
☐☐☐☐☐☐	☐☐ ☐	☐☐☐				☐
☐☐☐☐☐☐	☐☐ ☐	☐☐☐				☐

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Name and official title of owner/operator OR owner/operator's authorized representative _____ Signature _____ Date Signed _____

Optional Attachments

☐ I have attached a site plan
☐ I have attached a list of site coordinate abbreviations
☐ I have attached a description of ____ and other safeguard measures

EPCRA SECTIONS 311 - 312

- **Hazardous chemicals are excluded if they are:**
  - Present as a solid in any manufactured item to the extent that exposure to the substance does not occur under normal conditions of use
  - Used for personal or household purposes, or is present in same form and concentration as used by general public
  - Used in a research laboratory, hospital, or other medical facility under the direct supervision of a technically qualified individual
  - Food, food additives, color additives, drugs, or cosmetics regulated by FDA
  - Used in routine agricultural operations, or are fertilizers held for sale by a retailer to the ultimate consumer

EPCRA SECTIONS 311 - 312

- **States may require facilities to:**
  - Submit Tier II form
  - Submit state reporting forms
  - Report lists of hazardous chemicals
  - Report exact quantities
  - Provide additional information (e.g., UN registry number)
- **States may set lower reporting thresholds**
- **States may have a fee system**

EPCRA SECTIONS 311 - 312

- **Public availability of inventory information**
  - **EPCRA sections 311 and 312 information available to the general public upon request from SERC/TERC or LEPC**
  - **General public has the right to request, through the LEPC or SERC/TERC, additional information**

TOXICS RELEASE INVENTORY REPORTING REQUIREMENTS AND THRESHOLDS

WHO MUST REPORT?

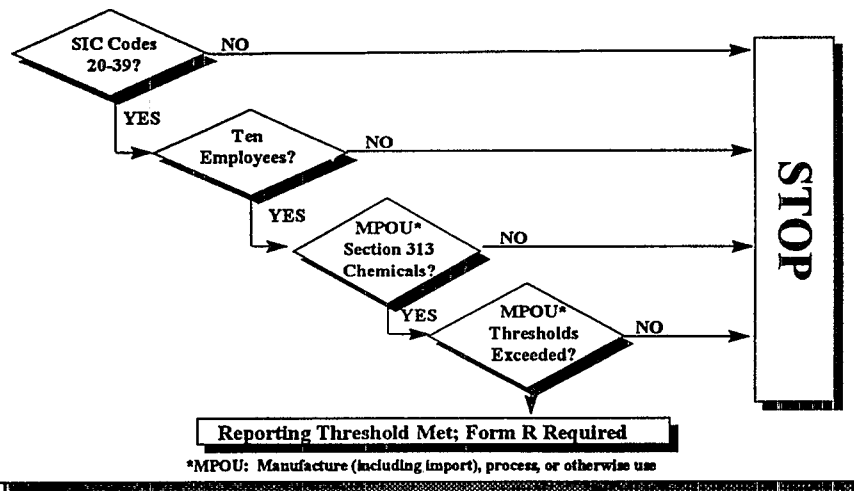
- **Private-sector facilities**
  - **In SIC codes 20 through 39*; and**
  - **With 10 or more full time employees (equivalent of 20,000 hours per year); and**
  - **That exceed manufacture, or process, or otherwise use thresholds**

***Note: Beginning in reporting year 1998 (Form R reports due by 7/1/99), facilities in SIC codes 10 (except 1011, 1081, and 1094), 12 (except 1241), 4911, 4931, 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce), 4953 (limited to facilities regulated under RCRA Subtitle C), 5169, 5171, 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis) are subject to TRI.**

WHO MUST REPORT?

- **Federal facilities**
  - **Owned or operated by Executive Branch agencies**
    - » **No restrictions based on SIC code**
    - » **Includes laboratories, prisons, parks, hospitals**
  - **With 10 or more full-time employees (equivalent of 20,000 hours per year)**
  - **That exceed manufacture, or process, or otherwise use thresholds**
  - **Agency responsible for reporting on activities at Federal facilities that are conducted by, for, or in support of the agency**

THE TRI REPORTING PROCESS



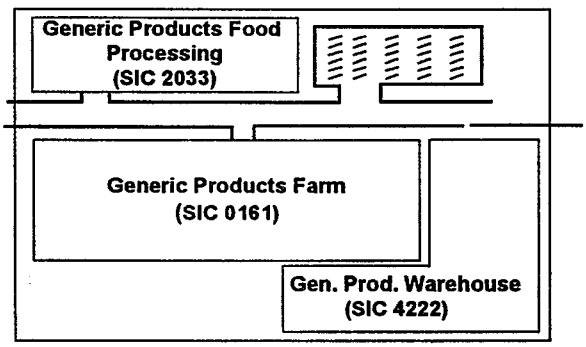
*MPOU: Manufacture (including import), process, or otherwise use

DEFINITION OF "FACILITY"

- "Facility" - "all buildings, equipment, structures, and other stationary items which are located on a single site or contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with, such person)." (EPCRA §329(4))
- Establishment - a separate economic unit of a "facility"
- Auxiliary facility - primarily supports another establishment's activities

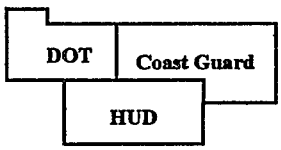
MULTI-ESTABLISHMENT FACILITY

Multi-Establishment Facility
(Three separate establishments located on contiguous/adjacent property owned by same person(s), is one facility under EPCRA)

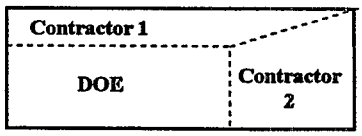


MULTI-ESTABLISHMENT FACILITY

- Determining how facilities report
  - Federal facilities and GOCOs



Ex. 1: Two separate reporting facilities (HUD and DOT including Coast Guard)



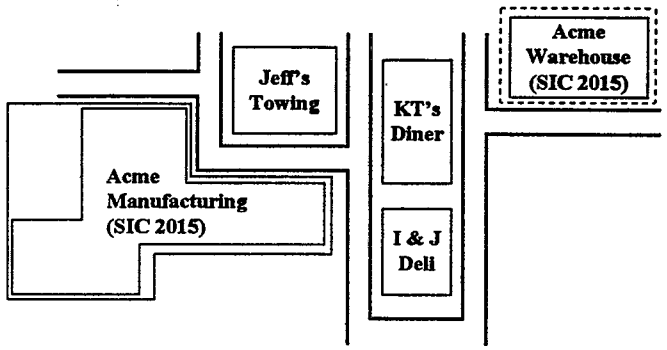
Ex. 2: One reporting facility (DOE)

AUXILIARY FACILITIES

- Determining how facilities report (continued)
  - Auxiliary facility
    - » Primary function is to support a covered facility's activities (e.g., warehouses, laboratories)
    - » Considered a covered facility for reporting purposes

AUXILIARY FACILITY

ACME Mfg. Facilities
(Warehouse is auxiliary facility of ACME Mfg.)



THRESHOLDS TRIGGERING SECTION 313 REPORTING

- **For a section 313 chemical, a facility meeting all criteria must file a Form R report for that chemical if it:**
  - **Manufactured (including import) more than 25,000 pounds per year, or**
  - **Processed more than 25,000 pounds per year, or**
  - **Otherwise used more than 10,000 pounds per year**

CATEGORIES OF MANUFACTURING ACTIVITIES

- **Manufacturing - generating a section 313 chemical**
  - **Intentionally producing chemicals for:**
    - **Sale**
    - **Distribution**
    - **On-site use or processing (e.g., intermediates)**
  - **Coincidentally producing chemicals as impurities or byproducts:**
    - **That remain with the intended product**
    - **That are formed during <u>any part</u> of the manufacturing processes, including waste treatment & fuel combustion**
  - **Importing**
    - **"Cause" to be imported**

CATEGORIES OF PROCESSING ACTIVITIES

- **Processing - the preparation of a section 313 chemical into a product for further distribution in commerce**
  - **Using as a reactant to manufacture another substance or product**
  - **Adding as a formulation component**
  - **Incorporating as an article component**
  - **Repackaging for distribution**

OTHERWISE USE

- Otherwise using - any activity that is not manufacturing or processing

  Examples

  - Chemical processing aid (e.g., solvents)
  - Manufacturing aid (e.g., lubricants, refrigerants)
  - Ancillary activities (e.g., chemicals used to remediate wastes)

DETERMINING CONCENTRATIONS OF SECTION 313 CHEMICALS

- Chemical component - include in threshold "each listed Section 313 chemical known to be present" at a concentration greater than the *de minimis* limits (EPCRA §313 (g)(1)(C))
  - "Known" - knowledge based on MSDS, labeling, literature, other vendor-supplied information, or existing analysis
- If concentration is unknown, threshold determination for the section 313 chemical is not required (40 CFR 372.30(b)(3))

DETERMINING CONCENTRATIONS OF SECTION 313 CHEMICALS

- Include a section 313 chemical in the threshold determinations if you know:
  - Exact concentration - use concentration provided
  - Upper bound - use upper limit
  - Range - use the midpoint of the range
  - Lower bound - subtract out other known constituents, create a range, and use the midpoint of range

Note: Thresholds are based on weight in pounds.

SPECIAL CONSIDERATIONS: MIXTURES AND TRADE NAME PRODUCTS

- Supplier Notification - requires suppliers to facilities described in 40 CFR 372.22 to:
  - Identify Section 313 chemical(s) by name and CAS number
  - Identify Section 313 chemical(s) as being subject to EPCRA Section 313 requirements
  - Provide concentration (or range) of Section 313 chemicals in mixtures and trade name products if above de minimis
  - Provide notification at least annually in writing or attached to the MSDS
  - Update notification when changes occur

METAL COMPOUND CATEGORIES

- Consider the entire weight of the compounds in the category when determining thresholds
- Include only the weight of the parent metal of the category (e.g., copper for copper compounds) when calculating releases, off-site transfers, and other waste management activities

DETERMINING THRESHOLDS FOR METAL COMPOUNDS

Example

A facility processes 100,000 pounds of a mixture containing 10% zinc chromate and 15% chromium dioxide by weight

- Quantity toward chromium compounds threshold

  (10% + 15%) x (100,000) = 25,000 pounds

- Quantity toward zinc compounds threshold

  (10%) x (100,000) = 10,000 pounds

- The 25,000-pound processing threshold applies, so chromium compounds are reportable and zinc compounds are not

ORGANIC COMPOUND CATEGORIES

- Consider the entire weight of the compounds in these categories when determining thresholds
- Include the entire weight of the compounds in the category when calculating releases, off-site transfers, and other waste management activities for all compounds in these categories

WATCH FOR DOUBLE COUNTING!!!

- For threshold determinations, section 313 chemicals reused or recycled at a facility: count original amount used only once
  - Note: Chemicals sent off-site for recycling and returned to the facility are considered new materials and counted for threshold determinations
  - For materials in use from previous years: count only the quantity added during current reporting year
- Section 313 chemicals stockpiled or in inventory but not manufactured, processed, or otherwise used during reporting year are not counted for threshold determinations

TRI FACILITY EXPANSION

FINAL RULE

- EPA issued a final rulemaking in the Federal Register on May 1, 1997 (62 FR 23834) to add seven industry groups to the list of facilities subject to EPCRA Section 313 and PPA Section 6607
- Rulemaking also provides clarification and changes to certain regulatory terms and definitions
- Facilities in added industry groups should begin recordkeeping activities on January 1, 1998 (Form R reports due by July 1, 1999)
- Changes will not affect reports due July 1, 1998

ADDITIONAL FACILITIES

- The seven industrial groups include:
  - Metal Mining
  - Coal Mining
  - Electricity Generating Facilities
  - Treatment, Storage, and Disposal Facilities (Subtitle C)
  - Chemicals and Allied Products - Wholesale
  - Petroleum Bulk Stations - Wholesale
  - Solvent Recovery Services

METAL MINING FACILITIES

- Includes metal mining facilities in the following SIC codes:
  - 1021 (Copper Mining)
  - 1031 (Lead and Zinc Mining)
  - 1041 (Gold Mining)
  - 1044 (Silver Mining)
  - 1061 (Ferro Alloy Ores (nickel))
  - 1099 (Metal ores)
- Specifically excludes metal mining in the following SIC codes:
  - 1011 (Iron Ores)
  - 1081 (Contract Mining Services)
  - 1094 (Uranium, Radium, Vanadium)

COAL MINING FACILITIES

- Includes coal mining facilities in SIC codes 1221 (Surface Mining of Bituminous Coal and Lignite), 1222 (Underground Mining of Bituminous Coal), and 1231 (Anthracite Mining)
- Coal mining activities (excluding extraction) are generally considered "otherwise uses" of listed Section 313 chemicals
- Coal extraction activities are exempt from EPCRA Section 313 reporting requirements (40 CFR 372.38(g))

ELECTRICITY GENERATING FACILITIES

- Includes electricity generating facilities in SIC codes 4911 (Electric Services), 4931 (Electric and Other Services Combined), and 4939 (Combination Utilities)
- Limited to facilities that combust coal and/or oil (in any percentage of fuel use) for purposes of generating power for distribution in commerce

ELECTRICITY GENERATING FACILITIES

- Combusting coal or oil for on-site support purposes does not subject the facility to EPCRA Section 313, provided that such combustion is not for the purposes of generating power for distribution in commerce such as:
  - Facility heating, testing or operation of emergency backup power systems, or start-up purposes

HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

- Includes Hazardous Waste Treatment, Storage, and Disposal (TSD) facilities in SIC code 4953 (Refuse Systems)
  - Facilities must be regulated under RCRA, Subtitle C
- Treatment for destruction, stabilization or disposal by TSD facilities of wastes generated off-site that contain listed Section 313 chemicals constitutes "otherwise use" of listed Section 313 chemicals

PETROLEUM BULK TERMINALS AND STATIONS

- Includes petroleum bulk terminals and stations in SIC code 5171 (Petroleum and Bulk Stations) (more than 10,000 gallon storage capacity)
- Primarily repackage and blend petroleum products for further distribution in commerce, which constitutes "processing" of the listed Section 313 chemicals

CHEMICAL DISTRIBUTION FACILITIES

- Includes wholesale chemicals and allied products (chemical distributors - mixing and blending) in SIC code 5169 (Chemical and Allied Products)
- Primarily conduct reformulation and repackaging activities, which constitutes "processing" of listed Section 313 chemicals

COMMERCIAL SOLVENT RECOVERY FACILITIES

- Includes solvent recovery facilities in SIC codes 4953 (Refuse Systems) and 7389 (Business Services)
  - Covered facilities in SIC code 7389 are limited to those primarily engaged in solvent recovery services on a contract or fee basis
  - Covered facilities in SIC code 4953 must be regulated under RCRA Subtitle C
- Solvent recovery activities also occur at facilities in SIC codes 5169 and 20-39

SIC CODES

- Under EPCRA Section 313, subject facilities are determined by classification of primary activities in the Standard Industrial Classification (SIC) system (40 CFR 372.22)
- On April 9, 1997 (62 FR 17288) the North American Industry Classification (NAIC) System was implemented
- SIC codes are to be used until EPA transitions to new NAIC system in future reporting years
- A crosswalk exists between the SIC and new NAIC codes (see 62 FR 17288)

NEW SUPPLIER NOTIFICATION REQUIREMENTS

- Beginning January 1, 1998, all manufacturers will be required to send supplier notification to all new industries listed in 40 CFR 372.22 including:
  - Metal Mining
  - Coal Mining
  - Electricity Generating Facilities
  - Treatment, Storage, and Disposal Facilities (Subtitle C)
  - Chemicals and Allied Products - Wholesale
  - Petroleum Bulk Stations - Wholesale
  - Solvent Recovery Services
- Only facilities in SIC codes 20-39 must supply the notification (New SIC codes are not directly covered)

CLARIFIED DEFINITION OF OTHERWISE USE

- Otherwise use of a Section 313 chemical also includes disposal, stabilization (without subsequent distribution in commerce), or treatment for destruction on-site if:
  - Section 313 chemical was received from off-site for the purposes of further waste management, or
  - Section 313 chemical was manufactured as a result of waste management activities on materials received from off-site for the purpose of further waste management
- Waste management activities include recycling, combustion for energy recovery, treatment for destruction, waste stabilization and release (including disposal)

WASTE MANAGEMENT GUIDANCE

- Waste management activities include:
  - Recycling
  - Combustion for energy recovery
  - Treatment for destruction
  - Waste stabilization
  - Release, including disposal

WASTE MANAGEMENT GUIDANCE

- Recycling (material coming on-site for purposes of recycling):
  - Recycling of a listed Section 313 chemical from a mixture for further distribution in commerce is considered to be "processing" of that chemical
  - If a facility recycles a listed Section 313 chemical, that was received from off-site to use as a solvent at the facility, the chemical is considered "otherwise used"

WASTE MANAGEMENT GUIDANCE

- **Combustion for energy recovery and defines treatment for destruction:**
  - **Combustion for energy recovery is the combustion of a Section 313 chemical that is (1) a RCRA hazardous waste or waste fuel, a constituent of a RCRA hazardous waste or waste fuel, or a spent or contaminated "otherwise used" material; and that (2) has a heating value high enough to sustain combustion (e.g., 5,000 BTU/lb.)**
  - **A Section 313 chemical that is combusted and meets criterion, but has a heating value <u>not</u> high enough to sustain combustion, is considered to be treated for destruction and not combusted for energy recovery**
  - **Metals have no heating value; therefore; they cannot be considered combusted for energy recovery or treated for destruction**

WASTE MANAGEMENT GUIDANCE

- **Waste stabilization process:**
  - **Any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquid as determined by Test Method 9095 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA pub. SW-846)**
  - **Includes mixing the hazardous waste with binders or other materials, and curing the resulting hazardous waste and binder mixture. Synonymous terms "waste fixation" and "waste solidification."**

SECTION 313 CHEMICAL LIST & INTERPRETIVE GUIDANCE REVIEW

SECTION 313 CHEMICAL LIST

- Dynamic, evolving list
  - Additions
  - Deletions
  - Modifications

SECTION 313 CHEMICALS AND CHEMICAL CATEGORIES

- Original list developed from Maryland and New Jersey "Right to Know" chemical lists
- Current list contains approximately 620 individual chemicals and 28 chemical categories (40 CFR 372.65)
- Petition process to add or delete chemicals

EPCRA SECTION 313 CHEMICAL QUALIFIERS

- Qualifiers - Listed chemicals with parenthetic qualifiers subject to TRI reporting only if manufactured, processed, or otherwise used in specified form. Below are some examples.

CHEMICAL	CAS#	QUALIFIER
Aluminum	7429-90-5	Fume or dust
Aluminum oxide	1344-28-1	Fibrous forms
Asbestos	1332-21-4	Friable forms
Isopropyl alcohol	67-63-0	Manufactured by strong acid process
Phosphorus	7723-14-0	Yellow or white
Saccharin	81-07-2	Manufacture only
Hydrochloric acid	7647-01-0	Acid aerosols
Sulfuric Acid	7664-93-9	Acid aerosols

NITRATE COMPOUNDS

- Water dissociable nitrate compounds category
  - For threshold determinations, use the weight of the nitrate compound, but use only the weight of the nitrate ion portion when calculating releases
  - Nitrate compounds are produced when nitric acid is neutralized
  - Includes compounds like sodium nitrate, silver nitrate, and ammonium nitrate
  - Ammonium nitrate (solution), deleted as a separately listed chemical for RY 1995, must be reported under the nitrate compounds category and ammonia listings as appropriate

DETERMINING THRESHOLDS FOR NITRATE COMPOUNDS

Example

- 20,000 pounds of nitric acid (HNO_3) are neutralized with sodium hydroxide (NaOH) in an on-site wastewater treatment system. Perform a threshold determination for nitrate compounds (water dissociable; in aqueous solution):

  Assume:

  - Neutralization 100% complete and generates sodium nitrate ($NaNO_3$), which is released to a water body
  - Molecular weight (MW) of HNO_3 = 63
  - MW of $NaNO_3$ = 85
  - 1 mole of HNO_3 generates 1 mole of $NaNO_3$

DETERMINING THRESHOLDS FOR NITRATE COMPOUNDS

Example (continued)

Quantity of $NaNO_3$ manufactured = quantity of HNO_3 neutralized x (MW of $NaNO_3$/MW of HNO_3)

Quantity of $NaNO_3$ manufactured = 20,000 pounds x (85/63)

Quantity of $NaNO_3$ manufactured = 26,984 pounds

The 25,000 pound manufacturing threshold is exceeded!

CALCULATING RELEASES FOR NITRATE COMPOUNDS

Example (continued)

Releases are reported on nitrate ion (NO_3^-) basis. Calculate the quantity of nitrate ion (MW of NO_3^- = 62) released to a water body:

Pounds of NO_3^- = pounds of $NaNO_3$ x (MW of NO_3^-/MW of $NaNO_3$)

Pounds of NO_3^- = 26,984 pounds x (62/85)

Pounds of NO_3^- = 19,682 pounds (rounded to 20,000 pounds)

ADMINISTRATIVE STAYS

- No reporting required for the following chemicals until further notice
  - 2,2-Dibromo-3-nitrilopropionamide (DBNPA) (CAS # 10222-01-2)
    - » Effective RY 1995
  - Hydrogen sulfide (CAS # 7783-06-4)
    - » Effective RY 1994
  - Methyl mercaptan (CAS # 74-93-1)
    - » Effective RY 1994

CHEMICALS MODIFIED

- Hydrochloric acid (CAS # 7647-01-0), effective RY 1995
  - Deleted non-aerosol forms of hydrochloric acid
    - » Aerosol forms include any airborne hydrochloric acid (including mists, vapors, gases or fogs) droplets without regard to particle size
- Sulfuric acid similarly modified, effective RY 1994

CHEMICALS MODIFIED

- **Ammonia**
  - **Requires threshold determination and release calculations of aqueous ammonia from any source (i.e., anhydrous ammonia in water or water dissociable ammonium salts) be based on 10 percent of the total ammonia present in aqueous solutions**
  - **Anhydrous ammonia - include 100% for thresholds and releases**
    - **» Including air releases from aqueous ammonia**
  - **Effective RY 1994**

THRESHOLD DETERMINATIONS AND RELEASE CALCULATIONS FOR AMMONIA LISTING

- **Example**

A facility otherwise uses 1,000,000 pounds of ammonium chloride (NH_4Cl) in aqueous solution, which is discharged to a water body. The total quantity applied to the ammonia listing is calculated as follows.

Calculate the ammonia equivalent weight percent of ammonium chloride (equivalent weight of NH_3 = 17.03 kg/kmol, MW of NH_4Cl = 53.49 kg/kmol)

(NH_3 equivalent weight)/(MW ammonium chloride)

(17.03 kg/kmol)/(53.49 kg/kmol) x 100 = 31.84%

THRESHOLD DETERMINATIONS AND RELEASE CALCULATIONS FOR AMMONIA LISTING

- Example (continued)
  - The total quantity of aqueous ammonia present in solution is 31.84% of the 1,000,000 pounds ammonium chloride used, or 318,400 pounds.
  - The total quantity applied to the ammonia listing is 10% of the total quantity of aqueous ammonia present, or 31,840 pounds, which exceeds the 10,000-pound otherwise use threshold.
  - The total quantity of ammonia released to water is also 10% of the total quantity of aqueous ammonia present, or 31,840 pounds.

CHEMICALS MODIFIED

- Glycol ethers category
  - Removed surfactant glycol ethers from category (59 FR 34386, 7/5/94)
  - Common glycol ethers still in category include:
    - 2-Butoxyethanol (CAS # 111-76-2)
    - Diethylene glycol monoethyl ether acetate (CAS # 112-15-2)
    - Diethylene glycol monobutyl ether (CAS # 112-34-5)
  - Effective RY 1993

PROPOSED MODIFICATION

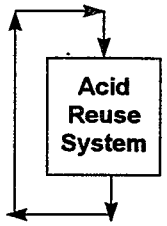
- **Dioxin and Dioxin-like Compounds**
  - **Proposal to add chemical category for "Dioxin and Dioxin-like Compounds"**
  - **Current listing for PCBs would be modified to delete those PCBs proposed for regulation under the dioxin category**
  - **EPA is evaluating whether reporting threshold for dioxin and other persistent and bioaccumulative compounds should be lowered**

INTERPRETIVE GUIDANCE
Recycling as a Process Activity

- **Recycling as a Process Activity**
  - **The recovery of a listed toxic chemical for further distribution in commerce or commercial use is "processing" of that chemical**
  - **The off-site transfer of a listed toxic chemical for recycling is "processing" of that chemical**

INTERPRETIVE GUIDANCE
Acid Aerosols Threshold Determinations

- Acid Reuse Systems (Sulfuric and hydrochloric acid only)
  - To calculate the amounts manufactured and otherwise used, the facility may apply the total volume of acid in the system only once toward the threshold and the amount of virgin acid added to the system during the RY.



Total System Volume + Total Virgin Acid Added

= Amount Acid Aerosols Manufactured/Otherwise Used

INTERPRETIVE GUIDANCE
Acid Aerosols Threshold Determinations

- Acid Aerosols Generated in Storage Tanks
  - The amount of acid aerosol manufactured is determined by the average amount that existed in the atmosphere above the acid solution during the year.
- Acid Aerosols Removed by Scrubbers
  - Non-aerosol forms of sulfuric/hydrochloric acid are not reportable under EPCRA Section 313; therefore, acid aerosols removed by scrubbers are converted to a non-reportable form, the quantity removed by the scrubber should be reported as having been treated for destruction

INTERPRETIVE GUIDANCE
Acid Aerosols Threshold Determinations

- **Sulfuric Acid Aerosols Formation in Stacks from Combustion Processes**
  - **Sulfuric acid aerosols are formed in flue gas during the combustion of fuel oil, coal, and other sulfur-containing fuels**
  - **Water and sulfur trioxide, combustion products of fuel combustion, react quickly to form sulfuric acid when temperatures are below the dew point (typically below 136 to 143 degrees Celsius)**
  - **See *Guidance for Reporting Sulfuric Acid* (August 1997) for specific dew point calculations**

EXERCISE 1:
CALCULATING RELEASES OF AMMONIA AND NITRATE COMPOUNDS

During the calendar year, a facility uses 200,000 pounds of nitric acid solution containing 50 percent (by weight) nitric acid (HNO_3) in an etching process. All of the nitric acid is eventually transferred to an on-site treatment facility as part of an aqueous waste stream. The nitric acid is neutralized with pure (gaseous) anhydrous ammonia (NH_3). The facility uses an excess of ammonia to assure complete neutralization to pH 7 to 8. During the calendar year, the facility used 30,000 pounds of ammonia. As a result of the treatment process, a nitrate compound, ammonium nitrate (NH_4NO_3), is formed. The ammonium nitrate and any remaining ammonia are then released to a watebodyr.

Using the additional information below, complete questions a through d.

Assumptions

For simplicity, assume air emissions are zero.

Chemical Name	Molecular Weights
Ammonium nitrate (NH_4NO_3)	= 80.04 lb/lbmol
Ammonia (NH_3)	= 17.03 lb/lbmol
Nitric acid (HNO_3)	= 63.01 lb/lbmol
Nitrate ion (NO_3^-)	= 62.01 lb/lbmol

Chemistry Fundamentals

Nitric acid (HNO_3) and anhydrous ammonia (NH_3) are monovalent and react in a 1:1 ratio. One mole of NH3 is used to neutralize each mole of HNO_3 treated. When neutralized with anhydrous ammonia, nitric acid (HNO_3) produces ammonium nitrate (NH_4NO_3) in a 1:1 ratio. These substances are monovalent, so for each mole of HNO_3 neutralized, one mole of NH_4NO_3 is produced. In other words:

$$HNO_3 + NH_3 \rightleftharpoons NH_4NO_3$$

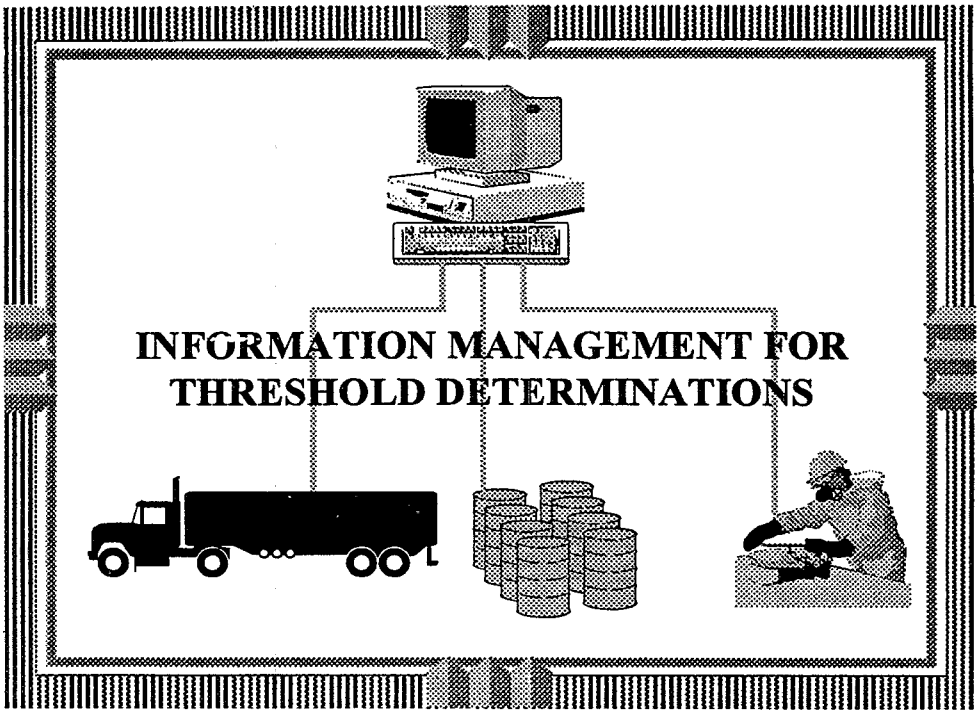
Therefore, 63.01 pounds of nitric acid reacts with 17.03 pounds of ammonia to produce 80.04 pounds of ammonium nitrate (which contains 62.01 pounds of nitrate ion).

a) Based on the above scenario and information available, determine which toxic chemicals would be subject to EPCRA section 313 threshold and release determinations.

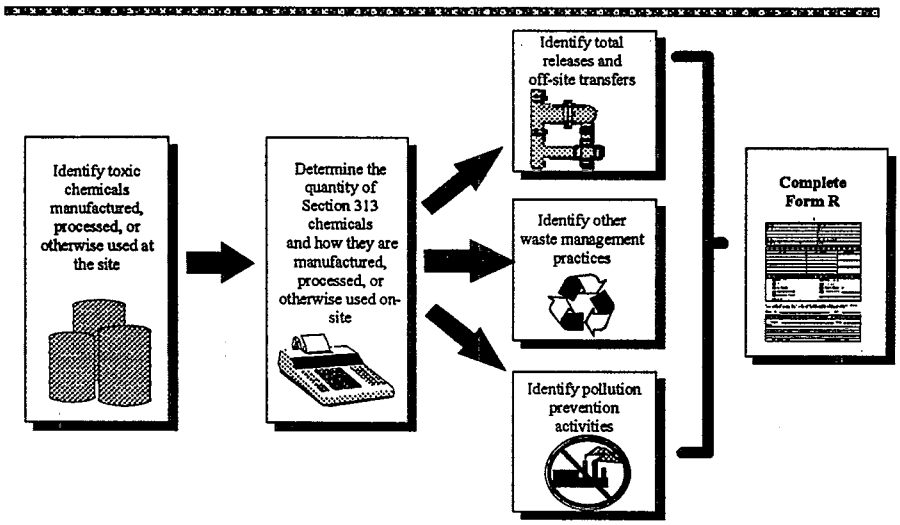
b) Calculate the quantity of nitric acid applied towards threshold determinations and release calculations.

c) Calculate the quantity of ammonia applied towards threshold determinations and release calculations.

d) Calculate the quantity of ammonium nitrate applied towards threshold determinations and release calculations.



THE TRI REPORTING PROCESS



TOOLS FOR DETERMINING QUANTITIES

Identify Toxic Chemicals:		Collect Data to Calculate Thresholds
MSDS		Inventory Records
Common Synonyms Document		Throughput/Production Volume
Process Knowledge		Purchase Records
Other References (Merck Index)		EPCRA or Other Env. Reports
Suppler Notification		Call the Vendor
		Ask the User

THRESHOLD DETERMINATIONS AND THE DE MINIMIS EXEMPTION

- Certain activities may be exempt from threshold determinations if the quantity of a Section 313 chemical is:
  - An OSHA-defined carcinogen present at a concentration of less than 0.1% by weight

    or
  - Any other Section 313 chemicals present at a concentration of less than 1% by weight
  - De Minimis levels for each Section 313 chemical and chemical category are provided by EPA in the *Form R and Instructions* document

INSTITUTIONALIZING DATA COLLECTION

- **Methods for institutionalizing data collection**
  - **Coordinate with purchasing/vendors**
  - **Develop inventory controls**
  - **Require requisition or "sign out" procedure for toxic chemicals**
  - **Take year-end inventories**
- **Threshold determination worksheets**

OPTIONAL SECTION 313 REPORTING THRESHOLD WORKSHEET

Facility Name: OMNI CHEMICAL
Toxic Chemical or Chemical Category: Toluene
Reporting Year: 1995

Date Worksheet Prepared: 02/13/96
Prepared By: J.S.P.

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs):		
				Manufactured	Processed	Otherwise Used
1. Joe's Degreaser	Purchasing	50	10,500			5,250
2. Yellow Safety Paint	Vendor	5	3,000			150
3. Parts Washer Fluid	Purchasing	40	42,000			16,800
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) 22,200 lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1. Yellow Safety Paint	Struct. Comp.	100			150
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) 150 lbs.

Step 3. Calculate the amount subject to threshold: (A - A_1) _____ lbs. (B - B_1) _____ lbs. (C - C_1) 22,050 lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all activities. Do not submit this worksheet with Form R. Retain for your records.

MANAGEMENT PRACTICES

- Begin early
  - Implement a program to gather "real-time" data on usage
  - Searches for historical information can be difficult
- Use a team approach
  - Include all relevant personnel (e.g., engineering, environmental, operations)
  - Spread the burden

RECORDKEEPING

- Detailed records
  - Improve reporting accuracy and data quality
  - Reduce replication of effort from year to year
- Well-labeled calculations and assumptions
  - Serve as standard operating procedures (SOPs) for future years
  - Ensure consistency from year to year, especially if personnel responsible for reporting change
- All records used to complete Form R must be kept for three years (40 CFR 372.10)
- EPA will review records during a data quality audit

EXERCISE #2

IDENTIFYING EPCRA SECTION 313 CHEMICALS

Purpose: Familiarize participants with use of the Common Synonyms document. Develop ability to cross-reference chemical names and to identify correctly Section 313 chemicals.

Take-Aways: Experience with Common Synonyms document.
Understanding of nuances of chemical compositions.

Materials: Common Synonyms document
Material Safety Data Sheets (MSDS)

Instructions: Attached is a package of chemicals, chemical compounds, and chemical mixtures present at your facility. Determine if any of these chemicals or parts of these chemicals is on the EPCRA Section 313 list. Your Common Synonyms document will assist you. If you determine that a chemical or component of a product or mixture is on the list present at or above the appropriate de minimis level, prepare a list of the appropriate section 313 chemicals and CAS numbers as listed in the Common Synonyms document.

IDENTIFYING EPCRA SECTION 313 CHEMICALS

MSDS Name	Section 313 Chemical(s) Name	Concentration	Notes

MEADOWBROOK COMPANY

SPELTER, WEST VIRGINIA 26438

RAW MATERIAL SUPPLIER DATA SHEET

I. TRADE NAME CRUDE ZINC OXIDE

CHEMICAL NAME ZINC OXIDE EPA/GAS 1314-13-2

MANUFACTURER MEADOWBROOK COMPANY
DIV OF T. L. DIAMOND & CO., INC.

SPECIFICATIONS	GRADE A	GRADE B
Zn	50-59%	60%-68%
Fe	1-3%	1-3%
Al	.8-3.5%	.8-3.5%
Pb	0.1-0.5 Avg. 0.2	0.1-0.5 Avg.0.2%
Cl	0.0-0.3%	0.0-0.3%
Cd	Less Than .01	Less Than .01
Cu	0.04-0.40	0.04-0.40

II. NON TOXIC SOLID MATERIAL WITH A PARTICLE SIZE RANGE UP TO 1/4 INCH.

III. SPECIFIC GRAVITY 5.6
APPARENT DENSITY 130-160 LBS/CU FOOT
NON SOLUABLE IN WATER NON VOLATILE
LIGHT GRAY, ODORLESS COARSE POWDER

IV. NO FIRE OR EXPLOSION HAZARD. CAN REACT WITH MAGNESIUM OR CARBON WHEN HEATED.

V. NO PARTICULAR HEALTH HAZARD, TLV (S) FOR PRINCIPLE INGREDIENT
PEL 5 Mg/M³ FOR ZINC OXIDE FUME

VI. NON REACTIVE AT AMBIENT EXCEPT WITH MINERAL ACIDS

VII. SPILL OR LEAK PROCEDURES
Clean up & return to labeled containers

VII. PERSONAL PROTECTION
Niosh respirator suggested for comfort when material is dry & dusty

HANDLERS SHOULD WEAR GLOVES AND SAFETY GOGGLES.

3M General Offices
3M Center
St. Paul, Minnesota 55144-1000
612/733-1110

MATERIAL SAFETY
DATA SHEET

3M

DIVISION: INDUSTRIAL MINERAL DIVISION
TRADE NAME:
3M BRAND ROOFING GRANULES (WAUSAU, WI)

3M I.D. NUMBER:

98-0111-1216-0	98-0111-1217-8	98-0111-1218-6	98-0111-1219-4
98-0111-1220-2	98-0111-1221-0	98-0111-1222-8	98-0111-1223-6
98-0111-1252-5	98-0111-1253-3	98-0111-1278-0	98-0111-1288-9
98-0111-1290-5	98-0111-1292-1	98-0111-1293-9	98-0111-1294-7
98-0111-1318-4	98-0111-1319-2	98-0111-1320-0	98-0111-1321-8
98-0111-1322-6	98-0111-1323-4	98-0111-1324-2	98-0111-1325-9
98-0111-1348-1	98-0111-1444-8	98-0111-1445-5	98-0111-1446-3
98-0111-1447-1	98-0111-1448-9	98-0111-1449-7	98-0111-1450-5
98-0111-1451-3	98-0111-1452-1	98-0111-1453-9	98-0111-1454-7
98-0111-1457-0	98-0111-1484-4	98-0111-1488-5	

ISSUED: SEPTEMBER 13, 1994
SUPERSEDES: NOVEMBER 23, 1993
DOCUMENT: 10-0170-0

1. INGREDIENT

INGREDIENT	C.A.S. NO.	PERCENT		
PLAGIOCLASE FELDSPAR	None	30.0	-	35.0
QUARTZ	14808-60-7	25	-	35
POTASSIUM FELDSPAR	None	20	-	25
SODIUM SILICATE	1344-09-8		<	5.0
KAOLIN	1332-58-7		<	5.0
CARBON BLACK	1333-86-4		<	0.9
CHROMIUM OXIDE (TRIVALENT CHROMIUM)	1308-38-9		<	0.9
HYDROTREATED HEAVY NAPHTHENIC PETROLEUM DISTILLATES	64742-52-5		<	0.9
RUTILE TITANIUM DIOXIDE	1317-80-2		<	0.9
IRON OXIDE (FE2O3)	1309-37-1		<	0.9
ZINC FERRITE	12063-19-3		<	0.9

NOTE: THE AMOUNT OF DUST GENERATED WHILE HANDLING THESE ROOFING GRANULES IS EXPECTED TO VARY DEPENDING ON THE USER'S OPERATION. THE LEVEL OF RESPIRABLE CRYSTALLINE SILICA IS EXPECTED TO BE LESS THAN 15% OF THE RESPIRABLE DUST.

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTI REQUIREMENTS OF SECTION 313 OF TITLE III OF THE EMERGENCY PLANNING ANDCOMMUNITY RIGHT-ACT OF 1986 AND 40 CFR PART 372:
CHROMIUM OXIDE (TRIVALENT CHROMIUM)
ZINC FERRITE

2. PHYSICAL DATA

BOILING POINT:	N/A
VAPOR PRESSURE:	N/A
VAPOR DENSITY:	N/A
EVAPORATION RATE:	N/A
SOLUBILITY IN WATER:	N/A
SP. GRAVITY:	2.6-2.7
PERCENT VOLATILE:	N/A
VOLATILE ORGANICS:	N/A

Abbreviations: N/D - Not Determined N/A - Not Applicable

3M General Offices
CT 2192 -7
PAGE 2
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612/733-1110

MATERIAL SAFETY
DATA SHEET

3M

MSDS: 3M BRAND ROOFING GRANULES (WAUSAU, WI)
SEPTEMBER 13, 1994

2. PHYSICAL DATA (continued)

VOC LESS H2O & EXEMPT SOLVENT N/A
pH: ..... SL BASIC
VISCOSITY: ..... N/A
MELTING POINT..... N/A
APPEARANCE AND ODOR: Granules, Various colors, slightly oily odor

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... N/A
FLAMMABLE LIMITS - LEL: ..... N/A
FLAMMABLE LIMITS - UEL: ..... N/A
AUTOIGNITION TEMPERATURE: ... N/A
EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable
UNUSUAL FIRE AND EXPLOSION HAZARDS:
No unusual fire or explosion hazards are anticipated.

4. REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY - MATERIALS TO AVOID:
Not applicable.
HAZARDOUS POLYMERIZATION: Will Not Occur
HAZARDOUS DECOMPOSITION PRODUCTS:
None known.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Observe precautions from other sections. Collect spilled material. Use wet sweeping compound or water to avoid dusting.

RECOMMENDED DISPOSAL:
Dispose of waste product in a sanitary landfill.

Since regulations vary, consult applicable regulations or authorities before disposal.

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous). In the event of an uncontrolled release of this material, the user should determine if the release qualifies as a reportable quantity.

EPCRA HAZARD CLASS:
FIRE HAZARD: No **PRESSURE:** No **REACTIVITY:** No **ACUTE:** Yes **CHRONIC:** Yes

3M General Offices
3M Center
St. Paul. Minnesota 55144-1000
612/733-1110

MATERIAL SAFETY
DATA SHEET

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
No need for first aid is anticipated in the event of skin contact.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. The following should be worn alone or in combination, as appropriate, to prevent eye contact: Wear safety glasses with side shields.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact..

VENTILATION PROTECTION:
If exhaust ventilation is not available, use appropriate respiratory protection.

RESPIRATORY PROTECTION:
Avoid breathing of dust. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: half-mask dust respirator.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Not applicable.

FIRE AND EXPLOSION AVOIDANCE:
Not applicable.

EXPOSURE LIMITS

INGREDIENTS	VALUE	UNIT	TYPE	AUTH	SKIN*
PLAGIOCLASE FELDSPAR	NONE	NONE	NONE	NONE	
QUARTZ	0.1	mg/m3	TWA	ACGIH	
	as quartz resp.		dust		

Abbreviations: N/D - Not Determined N/A - Not Applicable

3M General Offices
3M Center
St. Paul, Minnesota 55144-1000
612/733-1110

MATERIAL SAFETY
DATA SHEET

3M

MSDS: 3M BRAND ROOFING GRANULES (WAUSAU, WI)
SEPTEMBER 13, 1994

7. PRECAUTIONARY INFORMATION (continued)

EXPOSURE LIMITS

INGREDIENTS	VALUE	UNIT	TYPE	AUTH	SKIN*
QUARTZ	0.1 as quartz resp.	mg/m3	TWA	OSHA	
POTASSIUM FELDSPAR	NONE	NONE	NONE	NONE	
SODIUM SILICATE	NONE	NONE	NONE	NONE	
KAOLIN	2 respirable dust	mg/m3	TWA	ACGIH	
KAOLIN	10	mg/m3	TWA	OSHA	
CARBON BLACK	3.5	mg/m3	TWA	ACGIH	
CARBON BLACK	3.5	mg/m3	TWA	OSHA	
CHROMIUM OXIDE (TRIVALENT CHROMIUM)	0.5 as Cr	mg/m3	TWA	ACGIH	
CHROMIUM OXIDE (TRIVALENT CHROMIUM)	0.5 as Cr	mg/m3	TWA	OSHA	
HYDROTREATED HEAVY NAPHTHENIC PETROLEUM DISTILLATES	5	mg/m3	TWA	CMRG	
HYDROTREATED HEAVY NAPHTHENIC PETROLEUM DISTILLATES	10	mg/m3	STEL	CMRG	
RUTILE TITANIUM DIOXIDE	10	mg/m3	TWA	ACGIH	
RUTILE TITANIUM DIOXIDE	10	mg/m3	TWA	OSHA	
IRON OXIDE (FE2O3)	5 as Fe	mg/m3	TWA	ACGIH	
IRON OXIDE (FE2O3)	10 as fume	mg/m3	TWA	OSHA	
IRON OXIDE (FE2O3)	5 as Fe	mg/m3	TWA	ACGIH	
ZINC FERRITE	NONE	NONE	NONE	NONE	

*** SKIN NOTATION:** Listed substances indicated with "Y" under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- CMRG: Chemical Manufacture Recommended Guidelines
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
May cause eye irritation if dust gets into eyes.

SKIN CONTACT:
No adverse health effects are expected from skin contact.

INHALATION:
Single overexposure, above recommended guidelines, may cause:

3M General Offices
3M Center
St. Paul, Minnesota 55144-1000
612/733-1110

MATERIAL SAFETY
DATA SHEET

8. HEALTH HAZARD DATA (continued)

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Prolonged or repeated overexposure, above recommended guidelines, may cause:

Silicosis: signs/symptoms can include shortness of breath and persistent coughing.

Pneumoconiosis (general): signs/symptoms can include persistent coughing and shortness of breath.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

CANCER:
QUARTZ SILICA (14808-60-7) is a potential cancer hazard causing lung tumors by the inhalation and intratracheal routes of exposure in laboratory animal studies(NTP anticipated human carcinogen, IARC probable human carcinogen 2A, Calif. Proposition 65).

SECTION CHANGE DATES

HEADING	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
INGREDIENTS	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
ENVIRON. DATA	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
PRECAUT. INFO.	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
HEALTH HAZD. DATA	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY DATA SHEET

Sealed Air Corporation
Engineered Products Division
10 Old Sherman Tnpk., Danbury, CT 06810. (203) 791-3500

EMERGENCY TELEPHONE NO: (203) 791-3500 M-F 8:30-5:00 ET
CHEMTREC 1-800-424-9300 (for Chemical Emergency" spill, leak, fire exposure or accident, 24 hours)

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	INSTAPAK® COMPONENT "A"
Chemical Name:	Polymethylene Polyphenylisocyanate
Trade Name:	Polymeric MDI
Chemical Family:	Aromatic Isocyanates
Chemical Formula:	N.A.

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredients:	CAS No.	Wt.%	OSHA-PEL	ACGIH-TLV
Polymeric Diphenylmethane Diisocyanate ("polymeric" MDI)	9016-87-9	100	N.E.	N.E.
Contains:				
4,4'-Diphenylmethane diisocyanate (4,4'-MDI; CAS 101-68-8; ≈ 45%)			0.02 ppm (Ceiling)	0.005 ppm (TWA)
Other MDI isomers and oligomers			N.E.	N.E.

SECTION 3 - HAZARDOUS IDENTIFICATION

EMERGENCY OVERVIEW

Health Hazards: Irritating to eyes, respiratory system and skin. Inhalation at levels above the occupational exposure limit could cause respiratory sensitization. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized persons should not be exposed to any mixture containing unreacted MDI.

Physical Hazards: Reacts slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

Appearance: Dark brown liquid.

Odor: Slightly aromatic (musty).

Note: Read the entire MSDS for a more thorough evaluation of the hazards.

SECTION 4 - FIRST AID MEASURES

Inhalation: Remove from further exposure and obtain medical attention. Treatment is symptomatic for primary irritation or difficulty in breathing. If breathing is labored, oxygen should be administered by qualified personnel. Apply artificial respiration if breathing has ceased or shows signs of failing. Asthmatic-like symptoms, if manifested, may develop immediately, or be delayed for up to several hours.

Skin Contact: Wash affected area thoroughly with soap and water. Launder contaminated clothing thoroughly before reuse. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.

Eye Contact: Flush with copious amounts of water for at least 15 minutes, holding lids open with fingers. If irritation persists. repeat flushing. Refer individual to a physician for immediate follow-up.

Ingestion: Do NOT induce vomiting. Provided the patient is conscious, wash out mouth with water then give 1 or 2 glasses of water to drink. Refer person to medical personnel for immediate attention.

Note to Physicians: Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for 48 hours. Pulmonary disorders may be aggravated by overexposure.

SECTION 5 - FIRE-FIGHTING MEASURES

Flash Point: 390° F (199° C) [Pensky-Martens Closed Cup]
Flammable Limits (lower): Not available
Flammable Limits (upper): Not available

Extinguishing Media: Carbon dioxide (CO_2), dry chemical, or chemical foam. If water is used, large quantities are required. Contain run-off water with temporary barriers.

Fire and Explosion Hazards: Containers may burst under intense heat. Avoid water contamination in closed containers; carbon dioxide is evolved which can cause pressure build-up. **Caution:** Reaction between water and hot isocyanate can be vigorous.

Special Fire Fighting Procedures: Firefighters must wear self-contained breathing apparatus to protect against toxic and irritating vapors; full protective clothing should also be worn.

NFPA Hazard Code:

Health:	2
Flammability:	1
Reactivity:	1
Special Hazard:	None

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Evacuate area surrounding the spill and prevent further leakage, spillage or entry into drains. Eye and skin protection should be worn during spill cleanup and ventilation maintained. If the potential for airborne concentrations of MDI above the PEL exists, then respiratory protection should be worn.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquid
Color: Dark brown
Odor: Slightly aromatic (musty)
Vapor Density (Air = 1): 8.5
Molecular Weight: Approx. 350
Melting Point: N. E.

Boiling Point: 406° F (208° C)
Vapor Pressure: < 10^{-5} mm Hg @ 25° C (for Polymeric MDI)
Specific Gravity: 1.24 @ 25° C
Bulk Density: 10.3 lbs/gal
% Volatile by Volume: Nil
Solubility in Water: Not soluble. Reacts slowly with water to liberate CO_2 gas.

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Avoid temperatures above 110° F (43° C) or below 40° F (4° C).
Polymerization: May occur at elevated temperatures in the presence of moisture, alkalies, tertiary amines and metal compounds.
Conditions to Avoid: Contact with moisture and other materials which contain active hydrogen.
Incompatible Materials: Water, amines, strong bases and alcohols. The reaction with water is slow at temperatures less than 120°F (49°C) but is accelerated at higher temperatures.
Hazardous Decomposition Products: Highly unlikely under normal industrial use. Exposure to fire or extreme heat may generate oxides of carbon, oxides of nitrogen, and traces of hydrogen cyanide.

SECTION 11 - TOXICOLOGICAL INFORMATION

Polymeric MDI:

LD_{50}, Oral:	>15,800 mg/kg (rat)
LD_{50}, Dermal:	>5000 mg/kg (rabbit)
LC_{50}, Inhalation:	370 - 490 mg/m^3/4 hours (rat) for an aerosol of polymeric MDI

Primary Route(s) of Exposure: Skin contact from liquid. Inhalation. However, due to the low vapor pressure, overexposure is not expected under normal conditions unless material is heated or used in a poorly ventilated area.

Inhalation: This product is a respiratory irritant and potential respiratory sensitizer. Inhalation of vapor or aerosol at levels above the occupational exposure limit can cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat, and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized persons should be removed from any further exposure. Persons with asthma-type conditions or other chronic respiratory diseases should be excluded from working with MDI. In a single evaluation of 5 men occupationally exposed to MDI and hydrocarbon solvent vapors under conditions where adequate ventilation or other safety precautions were not used, neuropsychologic findings were attributed to MDI.

Skin Contact: May cause irritation or rash. Can cause skin discoloration. Repeated and/or prolonged contact may result in skin sensitization. There is limited evidence from laboratory tests that skin contact may play a role in respiratory sensitization. This data reinforces the need to prevent direct skin contact and the importance of protective gloves.

SECTION 11 - TOXICOLOGICAL INFORMATION (continued)

Eye Contact: Liquid can cause eye irritation, tearing, reddening and swelling. Permanent corneal injury is unlikely. Exposure to MDI vapors in excess of 0.02 ppm may cause irritation.

Ingestion: Ingestion is unlikely. Based on the acute oral LD_{50}, this product is considered practically non-toxic by ingestion. Ingestion can cause irritation and corrosive action in the mouth, stomach and digestive tract.

Chronic Effects: A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol either at concentrations of 0, 0.2, 1, or 6 mg/m^3 (which corresponds to MDI levels equal to the OSHA-PEL, 5 times the OSHA-PEL and 30 times the OSHA-PEL). No adverse effects were observed at 0.2 mg/m^3 concentrations. At the 1 mg/m^3 concentration, minimal nasal and lung irritant effects were seen. Only at the top concentration (6 mg/m^3) was there an increased incidence of benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

Carcinogenicity: The ingredients of this product (>0.1%) are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA and not listed as carcinogens by NTP.

Mutagenicity: There is no substantial evidence of mutagenic potential.

Reproductive Effects: No adverse reproductive effects are anticipated.

Teratogenicity and Fetotoxicity: No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. The dose that produced this effect (1.2 ppm) is 60 times higher than the OSHA-PEL. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations well in excess of the defined occupational exposure limits.

SECTION 12 - ECOLOGICAL INFORMATION

Environmental Fate and Distribution: It is unlikely that significant environmental exposure in the air or water will arise, based on consideration of the production and use of the substance.

Persistence and Degradation: Immiscible with water, but will react with water to produce carbon dioxide, and inert and non-biodegradable solids.

Aquatic Toxicity:

LC_{50}:	>1000 mg/l (Zebra fish) At the highest level of 1000 mg/l, there were no deaths.
EC_{50} (24 hour):	>1000 mg/l (Daphnea magna)
EC_{50}:	>100 mg/l (E. Coli)

SECTION 13 - DISPOSAL CONSIDERATIONS

Incinerate or dispose of in accordance with existing federal, state and local environmental control regulations. This material is not a hazardous waste under RCRA 40 CFR 261 when disposed of in its purchased form. Small quantities should be treated with deactivation solution outlined in Section 6. Refer to the "Recommendations for the Safe Use and Handling of Instapak® Foam-in-Place Chemicals" bulletin for additional information concerning disposal of wastes and empty containers. Chemical waste, regardless of quantity, should never be poured into drains, sewers or waterways.

SECTION 14 - TRANSPORT INFORMATION

DOT: Containers less than 5,000 pounds are not regulated.

IMO: Not regulated.

IATA/ICAO Class: Not regulated.

Reportable Quantity (RQ): 5.000 lbs. for Methylene diphenyl diisocyanate (MDI), CAS #101-68-8 (≈ 45% of product).

SECTION 15 - REGULATORY INFORMATION

OSHA Status: This product is considered hazardous under the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA Status: All ingredients are listed or are not required to be listed.

SARA 302 Extremely Hazardous Substances: None

SARA 311/312 Hazard Categories: Immediate (acute) Health Hazard
Delayed (chronic) Health Hazard
Reactive Hazard

SARA 313 Listed Ingredients: This product contains the following chemicals subject to the reporting requirements: 100% Diisocyanate compounds (Category Code N120).

RCRA Status: Discarded product is not a hazardous waste under RCRA, 40 CFR 261, when disposed of in its purchased form.

SECTION 16 - OTHER INFORMATION

The following states have regulations that apply to the use of this product.

MA	Massachusetts Hazardous Substance List	NJ	New Jersey Hazardous Substance List
PA	Pennsylvania Hazardous Substance List		

The appropriate state agency should be contacted for further details on regulatory requirements for the substances shown below.

Ingredient	CAS No.	Wt. %
Methylene bisphenyl isocyanate (MDI) (Benzene, 1,1'-methylenebis[4-] isocyanato-)	101-68-8	45

Section(s) Revised: Format change

Printed on recycled paper (50% secondary material, minimum 10% post consumer) using vegetable based inks.
M-3 Rev. 4/97

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

I. PRODUCT IDENTIFICATION

UNLEADED GASOLINE

SUPPLIER:
MOBIL OIL CORP. (212) 883-4411
CHEMICAL NAMES AND SYNONYMS: TRANSPORT EMERGENCY TELEPH
PETROLEUM HYDROCARBONS (800)-424-9300 (CHEM
USE OR DESCRIPTION:
MOTOR FUEL

II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES

APPEARANCE: CLEAR LIQUID COLOR: HYDROCARBON PH: NA
VISCOSITY AT 100 F, SUS: <32.0 AT 40 C, CS: <1.0
VISCOSITY AT 210 F, SUS: NA AT 100 C, CS: NA
FLASH POINT F(C): -40(-40) (ASTM D-56)
MELTING POINT F(C): NA POUR POINT F(C): NA
BOILING POINT F(C): > 300(27)
RELATIVE DENSITY, 15/4 C: 0.7-0.76 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 200: 400.0
NA=NOT APPLICABLE. NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

III. INGREDIENTS

	WT. PCT. (APPROX)	EXPOSURE LIMITS MG/M3	PPM	SOURCES (AND NOTES
HAZARDOUS INGREDIENTS:				
UNLEADED GASOLINE	100	900	300	A

KEY TO SOURCES: A=ACGIH-TLV, A=SUGGESTED-TLV, M=MOBIL, O=OSHA
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS

IV. HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: SLIGHT EYE IRRITATION. MODERATE SKIN IRRITATION. RESPIRATORY IRRITATION. DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS.

V. EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
INHALATION: REMOVE FROM FURTHER EXPOSURE. IF UNCONSCIOUSNESS OCCUR SEEK IMMEDIATE MEDICAL ASSISTANCE AND CALL A PHYSICIAN. IF BREATHING HAS STOPPED, USE MOUTH TO MOUTH RESUSCITATION.
INGESTION: DO NOT INDUCE VOMITING. ADMINISTER VEGETABLE OIL. GET MEDICAL ASSISTANCE. (NOTE TO PHYSICIAN: MATERIAL IF ASPIRATED INTO THE LUNGS MAY CAUSE CHEMICAL PNEUMONITIS. TREAT APPROPRI-

********** VI. FIRE AND EXPLOSION HAZARD DATA **********
FLASH POINT F(C): -40(-40) (ASTM D-56)
FLAMMABLE LIMITS. LEL: 1.1 UEL: 7.6
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG
SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS. COOL STORAGE DRUMS WITH WATER SPRAY. EVACUATE AREA. PREVENT RUNOFF FROM FIRE CONTROL OR DILUTION FROM ENTERING STREAMS OR DRINKING WATER SUPPLY.
UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTREMELY FLAMMABLE LIQUID. VAPOR ACCUMULATION COULD FLASH AND/OR EXPLODE IF IN CONTACT WITH OPEN FLAME.
NFPA HAZARD ID: HEALTH: 1, FLAMMABILITY: 3, REACTIVITY: 0

********** VII. REACTIVITY DATA **********
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: HEAT, SPARKS, FLAME AND BUILD UP OF STATIC ELECTRICITY.
INCOMPATIBILITY (MATERIALS TO AVOID): HALOGENS, STRONG ACIDS, ALKALI AND OXIDIZERS.
HAZARDOUS DECOMPOSITION PRODUCTS: CO.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802. IN CASE OF ACCIDENT OR ROAD SPILL NOTIFY CHEMTREC (800) 424-9300.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ELIMINATE ALL IGNITION SOURCES. REMOVE LEAKING CONTAINERS TO DETACHED AREA. ABSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. RUNOFF MAY CREATE FIRE OR EXPLOSION HAZARD IN SEWER SYSTEM.
WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

********** IX. SPECIAL PROTECTION INFORMATION **********
EYE PROTECTION: GENERALLY EYE CONTACT IS UNLIKELY WITH THIS TYPE OF MATERIAL. IF EYE CONTACT IS LIKELY, SAFETY GLASSES WITH SIDE SHIELDS OR CHEMICAL TYPE GOGGLES SHOULD BE WORN.
SKIN PROTECTION: IF PROLONGED OR REPEATED SKIN CONTACT IS LIKELY, IMPERVIOUS GLOVES SHOULD BE WORN. GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: APPROVED RESPIRATORY EQUIPMENT MUST BE USED WHEN VAPOR OR MIST CONCENTRATIONS ARE UNKNOWN OR EXCEED THE TLV.
VENTILATION: VENTILATION REQUIRED AND EQUIPMENT MUST BE EXPLOSION PROOF. USE AWAY FROM ALL IGNITION SOURCES.
OTHER: AVOID PROLONGED REPEATED SKIN CONTACT AND BREATHING MISTS/VAPORS.

********** X. SPECIAL PRECAUTIONS **********

HANDLING: AVOID CONTACT WITH SKIN. AVOID INHALATION OF VAPORS OR MISTS. USE IN WELL VENTILATED AREA AWAY FROM ALL IGNITION SOURC

STORAGE: GROUND AND BOND ALL TRANSFER AND STORAGE EQUIPMENT; USE NON SPARKING TOOLS AND EQUIPMENT. DRUMS MUST BE GROUNDED AND BONDED AND EQUIPPED WITH SELF-CLOSING VALVES, PRESSURE VACUUM BUNGS AN FLAME ARRESTERS. STORE AWAY FROM ALL IGNITION SOURCES IN A COO AREA EQUIPPED WITH AN AUTOMATIC SPRINKLING SYSTEM. OUTSIDE OR DETACHED STORAGE PREFERRED. SEE APPENDIX FOR PRECAUTIONARY LAB FL-154

STORED MATERIALS MUST BE LABELED AS: EXTREMELY FLAMMABLE. VAPOR HARMFUL.

********** XI. TOXICOLOGICAL DATA **********

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 5 G/KG 1/10 RATS DIED AT THIS DOSAGE LEVEL. CONSIDERED TO BE NO MORE THAN SLIGHTLY TOXIC BASED ON SINGLE DOSE LEVEL TESTING AT 5 G/KG.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 0/10 RABBITS DIED AT THI DOSAGE LEVEL. CONSIDERED TO BE NO MORE THAN SLIGHTLY TOXIC BAS ON SINGLE DOSE LEVEL TESTING AT 2 G/KG.

INHALATION TOXICITY (RATS): TOXIC(ESTIMATED) ---BASED ON TESTING O SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION (RABBITS): CAUSED SLIGHT IRRITATION TO RABBITS. EYE IRRITATION SCORES: 5.3 AT 1 HOUR, 3.3 AT 24 HOURS, 2.3 AT 48 1.0 AT 72 HOURS

SKIN IRRITATION (RABBITS): MODERATELY IRRITATING TO RABBITS. PRIM IRRITATION SCORE: 3.2/8.

---CHRONIC OR SPECIALIZED (SUMMARY)---

RECENT STUDIES WITH LABORATORY ANIMALS HAVE SHOWN THAT GASOLINE VAP WHEN ADMINISTERED IN HIGH CONCENTRATIONS OVER A PROLONGED PERI TIME, CAUSED KIDNEY DAMAGE AND KIDNEY CANCER IN RATS AND LIVER CANCER IN MICE. AS FAR AS SCIENTIST KNOW, LOW LEVEL OR INFREQ EXPOSURE TO GASOLINE VAPORS IS UNLIKELY TO BE ASSOCIATED WITH CANCER OR OTHER SERIOUS DISEASES IN HUMANS.

---OTHER DATA---

GASOLINE CONSISTS OF A COMPLEX BLEND OF PETROLEUM/PROCESSING DERIVE PARAFFINIC, OLEFINIC, NAPHTHENIC, AND AROMATIC HYDROCARBONS WHI MAY CONTAIN UP TO 5 PERCENT BENZENE; AND DOSAGES OF MULTIFUNCT ADDITIVES.

********** XII. REGULATORY INFORMATION **********

TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.
D.O.T. SHIPPING NAME: GASOLINE
D.O.T. HAZARD CLASS: FLAMMABLE LIQUID
ID NO: UN NO: 1203
US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANC WITH OSHA CFR 1910.1200 AND DETERMINED TO BE HAZARDOUS.
RCRA INFORMATION: THE DISPOSAL OF THE UNUSED PRODUCT MAY BE SUBJECT TO RCRA REGULATIONS PER 40 CFR PART 261 FOR THE REASONS INCLUDIN BUT NOT LIMITED TO THOSE LISTED BELOW. DISPOSAL OF THE USED PRODUCT MAY BE REGULATED.
LEAD: 0.0016 PCT
FLASH: -40(-40) F(C)

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
UNLEADED GASOLINE		7,8,9,11,12,13,1 16,17

--- KEY TO LIST CITATIONS ---

1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = MI
16 = FL RTK, 17 = PA RTK.

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODU ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO I USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

******************************** APPENDIX ********************************

FOR MOBIL USE ONLY: MHC: 1 1 3* 1 2 PPEC: APPROVE REVISED: 10/24/8

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PRECAUTIONARY LABEL TEXT FOR PACKAGED PRODUCTS:

GASOLINE

DANGER.

EXTREMELY FLAMMABLE.
HARMFUL OR FATAL IF SWALLOWED.
VAPOR HARMFUL.

LONG-TERM EXPOSURE TO VAPORS HAS
CAUSED CANCER IN LABORATORY ANIMALS.

KEEP AWAY FROM HEAT, SPARKS AND FLAME.
AVOID PROLONGED BREATHING OF VAPOR.
KEEP CONTAINER CLOSED.
USE ONLY WITH ADEQUATE VENTILATION.
NOT TO BE USED AS A SKIN CLEANSING AGENT.
NEVER SIPHON BY MOUTH.
KEEP AWAY FROM EYES AND SKIN.
FAILURE TO USE CAUTION MAY CAUSE SERIOUS INJURY OR ILLNESS.

FIRST AID: IF SWALLOWED, DO NOT INDUCE VOMITING.
CALL A PHYSICIAN IMMEDIATELY.

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING,
GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH AND
CALL A PHYSICIAN.

ATTENTION.

EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING
FLAMMABLE OR EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR
WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS AND
PRECAUTIONS MUST BE OBSERVED UNTIL CONTAINER HAS BEEN
THOROUGHLY CLEANED OR DESTROYED.

REFER TO PRODUCT MATERIAL SAFETY DATA BULLETIN FOR
FURTHER SAFETY AND HEALTH INFORMATION.

MOBIL OIL CORPORATION, NEW YORK, N.Y. FL-154(5-84)

****

D.O.T. SHIPPING NAME: GASOLINE
D.O.T. HAZARD CLASS: FLAMMABLE LIQUID
D.O.T. HAZARD IDENTIFICATION NUMBER: UN NO: 1203

24-HOUR EMERGENCY ASSISTANCE	GENERAL ASSISTANCE	NFPA FIRE HAZARD
BP America(In Ohio):800-362-8059	216-441-8106 (Technical)	Flammability: 3
(Outside Ohio):800-321-8642	216-586-8023 (MSDS)	Health : 1
CHEMTREC Assistance:800-424-9300		Reactivity : 0
		Spl.Hazards:

MSDS Number > 3079 Version # : 2

MANUFACTURER/SUPPLIER:
BP Oil Company
ADDRESS: 200 Public Square, Cleveland, OH 44114-2375

PRODUCT IDENTIFICATION ID=

TRADE NAME:
LIGHT RAFFINATE
Date: 10/01/93

CAS NUMBER: 64741-84-0
SYNONYM(S):
SOLVENT REFINED NAPHTHA, LIGHT C5-11; NAPHTHA
CHEMICAL FAMILY:
PETROLEUM HYDROCARBONS
MOLECULAR FORMULA: MIXTURE
MOLECULAR WEIGHT: NA
PRODUCT CODE: P 0947
HIERARCHY: 030.000

PRODUCT HAZARD SUMMARY PH=

HEALTH
DANGER!
HARMFUL OR FATAL IF SWALLOWED.
ASPIRATION HAZARD IF SWALLOWED--CAN ENTER LUNGS AND CAUSE DAMAGE.
VAPORS MAY BE HARMFUL.
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT.
HEATED MATERIAL MAY CAUSE THERMAL BURNS.

FLAMMABILITY
WARNING!
FLAMMABLE LIQUID & VAPOR.

REACTIVITY
STABLE.

PRODUCT HEALTH HAZARD INFORMATION HH=

INGESTION:
PRACTICALLY NON-TOXIC (ACUTE EXPOSURE). Aspiration into lungs may cause pneumonitis. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. Exposure may cause symptoms similar to those listed under "Inhalation" (see Inhalation Section).

SKIN:
PRACTICALLY NON-TOXIC (ACUTE EXPOSURE). MODERATELY TO SEVERELY IRRITATING. Repeated or prolonged contact may result in defatting, redness, itching, pain, inflammation, cracking and possible secondary infection. Absorption from prolonged or massive skin contact may cause poisoning. Contact with heated material may cause thermal burns.

EYE:
SLIGHTLY IRRITATING. Exposure to vapors, fumes or mists may cause irritation. Contact with heated material may cause thermal burns.

========== PERSONAL PROTECTION INFORMATION ==========PI=

EYE PROTECTION:
Avoid eye contact with this material. Wear safety glasses or chemical goggles. Provide an eyewash station in the work area.

SKIN PROTECTION:
Prevent skin contact. Wear gloves found to be impervious under conditions of use. Additional protection may be necessary to prevent skin contact including use of apron, armcovers, face shield, boots, or full body protection. A safety deluge shower should be located in the work area.

RESPIRATORY PROTECTION:
If exposure limits are exceeded or if irritation is experienced, NIOSH approved respiratory protection should be worn. Ventilation and other forms of engineering controls are often the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations.

========== PHYSICAL PROPERTIES ==========PR=

BOILING POINT: 55 - 115.5 C (131-240 F)
SPECIFIC GRAVITY: 0.69
MELTING POINT: NA
% VOLATILE: 100
VAPOR PRESSURE: 1 PSI
EVAPORATION RATE (WATER=1): ND
VAPOR DENSITY (AIR=1): ND
VISCOSITY: 2 CP
% SOLUBILITY IN WATER: NEGLIGIBLE
OCTANOL/WATER PARTITION COEFFICIENT:
POUR POINT: ND
pH: NA
APPEARANCE/ODOR:
CLEAR LIQUID WITH A STRONG HYDROCARBON ODOR.

========== FIRE AND EXPLOSION DATA ==========FE=

FLASH POINT: 10.000 C (50 F)
AUTOIGNITION TEMPERATURE: ND
FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER:
1.000
FLAMMABILITY LIMITS IN AIR (% BY VOL.) UPPER:
8.000
BASIC FIREFIGHTING PROCEDURES:
Use dry chemical, foam or carbon dioxide to extinguish fire. Water may be ineffective but should be used to cool fire-exposed containers, structures and to protect personnel. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers or other drainage systems.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources and flash back. Dangerous when exposed to heat or flame. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be emitted upon thermal decomposition. Dangerous when exposed to heat or flame. Containers may explode in heat of fire. Vapors may concentrate in confined areas. Exposed firefighters must wear MSHA/NIOSH approved self-contained breathing apparatus with full face mask and full protective equipment.

========== REACTIVITY DATA ==========RD=

STABILITY/INCOMPATIBILTY:
Stable. Avoid contact with strong oxidizers.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:
Combustion may produce CO, CO2 and reactive hydrocarbons.

========== ENVIRONMENTAL INFORMATION ==========EI=

SPILL OR RELEASE TO THE ENVIRONMENT:
If your facility or operation has an "Oil or Hazardous Substance Contingency Plan", activate its procedures.

-- Take immediate steps to stop and contain the spill. Caution should be exercised regarding personnel safety and exposure to the spilled material.

-- For technical advice and assistance related to chemicals, contact CHEMTREC (800/424-9300) and your local fire department.

-- Notify the National Response Center, if required. Also notify appropriate state and local regulatory agencies, the LEPC and the SERC. Contact the local Coast Guard if the release is into a waterway.

Emergency Action:
Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. (Also see Personal Protection Information section.) Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire.

Spill or Leak Procedure:
Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces. Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Large Spills: Dike far ahead of liquid spill for later disposal.

Notification:
Any spill or release, or substantial threat of release, of this material to navigable water (virtually any surface water) sufficient to cause a visible sheen upon the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Failure to report may result in substantial civil and criminal penalties. Also contact the Coast Guard and appropriate state and local regulatory agencies.

WASTE DISPOSAL:
This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. Check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, 264, 268 and 270 apply. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

SARA TITLE III INFORMATION:
Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):
Immediate Hazard: X
Delayed Hazard: X
Fire Hazard: X
Pressure Hazard: -
Reactivity Hazard: -

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:
There may be specific regulations at the local, regional or state level that pertain to this material.

========== SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION ==========SP=
HANDLING/STORAGE:
Store in a well ventilated area away from sources of ignition and incompatibles.

EMPTY CONTAINERS:
Empty containers may contain toxic, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose containers unless adequate precautions are taken against these hazards.

========== TRANSPORTATION REQUIREMENTS (DOMESTIC LAND) ==========TR=
D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): FLAMMABLE LIQUID, N.O.S. (NAPHTHA), 3, UN 1993, PG I
D.O.T. HAZARD CLASS (49 CFR 172.101): 3
UN/NA CODE (49 CFR 172.101): UN 1993
PACKING GROUP (49 CFR 172.101): FLAMMABLE LIQUID
BILL OF LADING DESCRIPTION (49 CFR 172.202): FLAMMABLE LIQUID, N.O.S. (NAPHTHA), 3, UN 1993, PG I
D.O.T. LABELS REQUIRED (49 CFR 172.101): FLAMMABLE LIQUID
D.O.T. PLACARDS REQUIRED (49 CFR 172.504): FLAMMABLE LIQUID

========== INGREDIENTS/HEALTH HAZARD INFORMATION ==========IN=

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REF.
Solvent Refined Naphtha, Light ..C5-11	64741-84-0	99-100	300 ppm (1,370 mg/m3) TLV (ACGIH) for VM & P naphtha 300 ppm (1,350 mg/m3) PEL ; 400 ppm (1,800 mg/m3) STEL (OSHA) for VM & P naphtha 350 mg/m3 TWA; 1800 mg/m3 15-minute CEIL (NIOSH) for petroleum distillates (naphtha)
Hexane	110-54-3	10-15	50 ppm (176 mg/m3) TLV (ACGIH) 50 ppm (180 mg/m3) PEL (OSHA) 50 ppm (180 mg/m3) TWA (NIOSH)

Health Hazards: Classified as a primary skin irritant. Mild eye and respiratory tract irritant. Central nervous system depressant and neurotoxin.

Pentane, 3-Methyl	96-14-0	10-15	500 ppm (1760 mg/m3) TLV (ACGIH); 1000 ppm (3600 mg/m3) STE L (ACGIH); 500 ppm (1760 mg/m3) PEL (OSHA); 1000 ppm (3600 mg/m3) STE L (OSHA); 350 mg/m3 TWA (NIOSH); 18 00 mg/m3 STEL (NIOSH) recommended for alkanes

Health Hazards: Irritating to mucous membranes. Can be aspirated into the lungs and absorbed through the skin. May cause narcotic effects.

HEXANE, 3-METHYL	589-34-4	10-15	400 ppm (1600 mg/m3) TLV (ACGIH); 500 ppm (2000 mg/m3) STEL (ACGIH); 350 mg/m3 TWA (NIOSH); 18 00 mg/m3 15-minute CEIL (NIOSH) fo r for alkanes

Health Hazards: Classified as an eye, skin and mucous membrane irritant and central nervous system depressant.

Hexane, 2-Methyl	591-76-4	5-10	None established
Heptane (C7 & higher)	142-82-5	5-10	400 ppm (1640 mg/m3) TLV; 500 ppm (2050 mg/m3) STEL (ACGIH) 400 ppm (1600 mg/m3) PEL; 500 ppm (2000 mg/m3) STEL (OSHA) 85 ppm (350 mg/m3) TWA; 4 40 ppm (1800 mg/m3) 15-minute CE IL (NIOSH)

Health Hazards: Classified as a primary skin irritant. Mild eye and mucous membrane irritant. Central nervous system depressant and neurotoxin.

BUTANE, 2,2-DIMETHYL	75-83-2	1-5	500 ppm (1800 mg/m3) TLV & PEL; 1000 ppm (3600 mg/m3) STE L (ACGIH &

THALATION:
RACTICALLY NON-TOXIC TO SLIGHTLY TOXIC. May cause respiratory tract rritation and pulmonary edema. May cause harmful central nervous system ffects. Effects may include excitation, euphoria, headache, dizziness, owsiness, blurred vision, fatigue, tremors, convulsions, loss of nsciousness, coma, respiratory arrest and death. Repeated or prolonged xposures may cause behavioral changes and kidney and central nervous system amage.

========== FIRST AID ==========FA=

GESTION:
NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. GET MMEDIATE MEDICAL ATTENTION. If spontaneous vomiting occurs, monitor for reathing difficulty.

KIN CONTACT:
emove contaminated clothing immediately. Wash area of contact thoroughly th soap and water. Get medical attention if irritation persists. Thermal rns require immediate medical attention.

E CONTACT:
ush immediately with large amounts of water for at least 15 minutes. elids should be held away from the eyeball to ensure thorough rinsing. Get edical attention if irritation persists. Thermal burns require immediate edical attention.

NHALATION:
emove exposed person from source of exposure. If not breathing, ensure clear irway and institute cardiopulmonary resuscitation (CPR). If breathing is ifficult, administer oxygen if available. Get immediate medical attention.

========== NOTES TO PHYSICIAN ==========PN=

NGESTION: The most important risk to assess is the extent of aspiration of he product into the lungs since an acute chemical pneumonitis can rapidly rogress to respiratory failure. Gasping, coughing, and choking are resumptive evidence of aspiration. It is suggested that all patients uspected of hydrocarbon aspiration have base line chest x-rays. Immediate ospitalization should be considered for asymptomatic children with an normal chest x-ray, obtunded or hypoxic patients, intentional or massive ngestions, and patients with abnormal chest x-rays with clinically ignificant pulmonary disease.

astrointestinal symptoms are usually minor and pathological changes of the iver and kidney are reported to be uncommon in acute intoxications. econtamination (induced emesis or lavage) is controversial and should be onsidered on the merits of each individual case; of course the usual recaution of an endotracheal tube should be considered prior to lavage.

ydrocarbons may increase the sensitivity of the myocardium to catecholamines; lectrocardiographic monitoring may be indicated and careful consideration hould be given to the selection of bronchodilators.

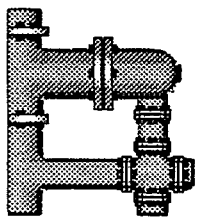
cute central nervous system signs and symptoms may result from large ngestions or aspiration-induced hypoxia.

NHALATION ABUSE: Gasoline is one of the solvents used by chemical substance busers. These patients may present with acute and/or chronic central nervous ystem signs or symptoms. They may also present with arrhythmias.

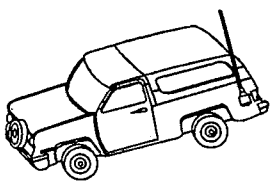
OSHA); 350 mg/m3 TWA; 180
0 mg/m3
STEL (NIOSH) recommended
for
alkanes

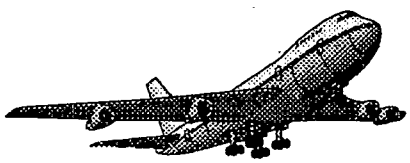
The OSHA Permissible Exposure Limits listed above were promulgated by OSHA in 1989. This standard was vacated by the U.S. Court of Appeals for the Eleventh Circuit. Exposure limits defined in specific chemical standards found in 29 CFR 1910.1001-1048 are not covered by this ruling and are still enforceable.

REVISION DATE: 01-oct-1993 REPLACES SHEET DATED: 17-aug-1990
COMPLETED BY: BP OIL HSEQ DEPARTMENT



SECTION 313 REPORTING EXEMPTIONS





SECTION 313 EXEMPTIONS

- Designed for manufacturing facilities to:
  - Reduce burden of reporting releases associated with <u>small or ancillary</u> operations
- If an exemption applies, then the amount of a Section 313 chemical subject to the exemption does not have to be included in:
  - Threshold determinations
  - Release reporting
  - Supplier notification
- Recognize that exemptions only apply to <u>certain limited</u> circumstances

SECTION 313 EXEMPTIONS

- Types of exemptions
  - De minimis
  - Article
  - Laboratory activities
  - Motor vehicle maintenance
  - Routine janitorial or facility grounds maintenance
  - Structural components
  - Personal use
  - Intake water and air

DE MINIMIS EXEMPTION

- The quantity of a Section 313 chemical in a mixture or trade name product is eligible for the exemption if the chemical is:
  - An OSHA-defined carcinogen present at a concentration of less than 0.1% by weight

    or
  - Any other Section 313 chemicals present at a concentration of less than 1% by weight

DE MINIMIS EXEMPTION
How It Works

- De minimis exemption <u>can</u> apply to:
  - Chemicals in mixtures or trade name products processed or otherwise used
  - Chemicals unintentionally manufactured below the de minimis as impurities that remain in products
  - Chemicals imported in mixtures or trade name products

DE MINIMIS EXEMPTION
How It Works

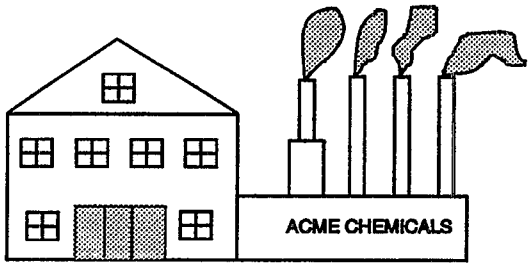
- De minimis exemption does <u>not</u> apply to:
  - Manufacturing chemicals (in most cases)
  - Manufacturing chemicals as by-products
  - Unintentionally manufacturing chemicals
    - » As by-products of waste treatment or fuel combustion
  - Wastes and waste streams
  - Releases from mixtures or trade name products that are not associated with a processing, or otherwise use activity
    - » Material storage not associated with processing or otherwise use activities

DE MINIMIS EXEMPTION
How It Works

- De minimis concentration for toluene is 1.0% (not an OSHA carcinogen)

Cleaning Mixture 0.5 % Toluene (exempt)

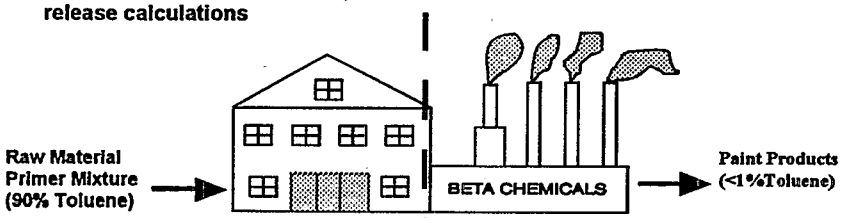
Raw Material Mixture 90% Toluene (not exempt)



- Toluene in cleaning mixture is below de minimis concentration and is eligible for the exemption

DE MINIMIS EXEMPTION
How It Works

- Processing a Section 313 chemical in a mixture to below the de minimis concentration does not exempt the chemical from threshold determinations and release calculations



Toluene > 1%

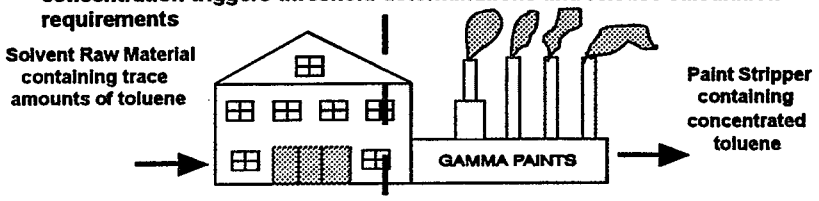
- De minimis exemption does not apply
- Threshold determination required
- Release calculations required

Toluene <1%

- De minimis exemption does not apply
- Threshold determination required
- Release calculations still required

DE MINIMIS EXEMPTION
How It Works

- Processing a Section 313 chemical in a mixture to above the de minimis concentration triggers threshold determinations and release calculation requirements



Toluene < 1%

- De minimis exemption can apply
- Do not include in threshold
- Do not include in release calculations

Toluene > 1%

- De minimis exemption does not apply
- Threshold determination required
- Release calculations required

ARTICLE EXEMPTION

- "Article" is defined as a manufactured item that:
  - Is formed into a specific shape or design during manufacture; and
  - Has end-use functions dependent in whole or in part on its shape or design during end-use; and
  - Does not release a Section 313 chemical under normal processing or use conditions at a facility
- The quantity of a Section 313 chemical used to manufacture an article is not exempt

ARTICLE EXEMPTION
How It Works

- If a release of a Section 313 chemical from an item occurs, the article status may be negated
- If all of the Section 313 chemical released from all like items is recycled, then the items remain articles and the Section 313 chemical is still exempt
- If less than or equal to 0.5 pounds of a Section 313 chemical is released, and not recycled, from all like items, the release may be rounded down to zero, and items maintain article status
- If more than 0.5 pounds of a Section 313 chemical is released in a non-recognizable form and not recycled, from all like items, none of the items meet the article exemption.

ARTICLE EXEMPTION
How It Works

- Example:
  Wire is cut to specified lengths to convey electricity. Wastes that may be generated include off-spec cuts and dust
  - Off-spec cuts that are recognizable as articles; article status maintained
  - Dust and off-spec cuts not recognizable as articles; negates article status if more than 0.5 pounds released and not recycled.

LABORATORY ACTIVITY EXEMPTION

- Section 313 chemicals manufactured, processed, or otherwise used in certain laboratory activities, performed under the supervision of a technically qualified individual, may be eligible for the exemption
  - Laboratories, themselves, are not exempt
- Section 313 chemicals used in specialty chemical production, pilot plant scale operations, and laboratory support operations are not eligible for the exemption

LABORATORY ACTIVITY EXEMPTION

- Definition of technically qualified individual (40 CFR 720.3(ee))
  - Capable of understanding the health and environmental risks associated with the chemical substance which is used under his or her supervision because of education, training, or experience, or a combination of these factors;
  - Responsible for enforcing appropriate methods of conducting scientific experimentation, analysis, or chemical research to minimize such risks; and
  - Responsible for the safety assessments and clearances related to the procurement, storage, use, and disposal of the chemical substance as may be appropriate or required within the scope of conducting a research and development activity.

LABORATORY ACTIVITY EXEMPTION
How It Works

Section 313 chemicals manufactured, processed, or otherwise used in these laboratory activities are eligible for the exemption

- **Sampling and analysis**
- **Research and development**
- **Quality assurance**
- **Quality control**

LABORATORY ACTIVITY EXEMPTION
How It Works

Section 313 chemicals manufactured, processed, or otherwise used in these laboratory activities are <u>NOT</u> exempt

- **Specialty chemical production**
- **Pilot-scale plant operations**
- **Support services**
  - **Photo processing**
  - **Instrument sterilization**

MOTOR VEHICLE MAINTENANCE EXEMPTION

- Section 313 chemicals used to maintain motor vehicles operated by the facility are eligible for the exemption
- Motor vehicles eligible for the exemption include cars, trucks, planes, and forklifts
- Motor vehicle maintenance includes:
  - Body repairs
  - Parts washing and plating
  - Fueling and adding other fluids (e.g., ethylene glycol)

ROUTINE JANITORIAL OR FACILITY GROUNDS MAINTENANCE EXEMPTION

- Section 313 chemicals contained in products used for non-process related routine janitorial or facility grounds maintenance are eligible for the exemption
  Examples
  - Phenol in bathroom disinfectants
  - Pesticides in lawn care products
- Section 313 chemicals used in the following activities are not exempt
  - Facility equipment maintenance
  - Cleaning or maintenance activities that are integral to the production process of the facility

STRUCTURAL COMPONENT EXEMPTION

- Section 313 chemicals that are part of structural components of a facility are eligible for the exemption provided the structure is not process related

  Examples

  - Copper in pipe used in construction of employees' bathroom facilities
  - Metals, pigments, and solvents in paint applied to facility structure

OTHER SECTION 313 EXEMPTIONS

- Section 313 chemicals contained in non-process related items for employee personal use
  - HCFC 22 in air conditioners used solely for employee comfort
  - Chlorine used to treat on-site potable water
  - Phenol in a facility medical dispensary
- Section 313 chemicals found in intake water and air

EXERCISE #3: THRESHOLD QUIZ

Purpose: Familiarize participants with the criteria for TRI reporting, including thresholds for manufacturing, processing, or otherwise using listed chemicals, which determine whether or not a facility must submit a Form R for a listed chemical.

Take-Aways: Knowledge and understanding of TRI reporting thresholds.

Instructions: Read each question carefully. Using your knowledge of TRI reporting thresholds, choose the best of the four answers.

1. A facility processes 21,000 pounds of formaldehyde each calendar year. It also imports and then otherwise uses 9,000 pounds of formaldehyde annually. In addition, each year the facility receives 15,000 pounds of solution that contains 34 percent formaldehyde by weight and repackages it for distribution and sale. The firm is in SIC code 2834, ships over 600 pounds of formaldehyde in wastes off-site for disposal, and has 20 full-time employees. Assuming these values remain the same over the next five years, under section 313 this firm:

   a. Must report for each calendar year.

   b. Does not have to report for each calendar year, because the thresholds are not met.

   c. Will not be required to report for each calendar year because it does not manufacture the chemical.

   d. Is not required to report because it employs less than 25 full-time employees.

2. Fifteen thousand (15,000) pounds of a listed chemical is purchased in the current reporting year and is used in a re-circulating cooling jacket. This quantity remains in use indefinitely and no additional quantity is added in subsequent years. When are you required to consider use of the mixture when determining thresholds?

   a. Do not consider this type of material at all because it is a purchased compound.

   b. The use of the compound must be considered for the current reporting year only.

   c. The use of the compound must be considered for the current reporting year and every reporting year thereafter, until the mixture is replaced.

   d. Consider only a part of the total amount the current reporting year, and a part every reporting year thereafter, for the life of the mixture.

3. A facility produces a listed chemical as a result of its waste treatment operations, and transfers the listed chemical to an off-site location, where all of the section 313 chemical is extracted and recycled. Which of the following is true?

   a. The facility can exclude amounts of this listed chemical from threshold determinations and release estimation because the source qualifies for the de minimis exemption.

b. Coincidental production of a listed chemical is not covered under section 313, therefore the facility need not consider this source of chemical production towards thresholds and estimation of off-site transfers.

c. The facility need not consider this source for thresholds and estimation of off-site transfer because all of the listed chemical is eventually recycled.

d. The facility must include all amounts of the listed chemical coincidentally produced in threshold determinations.

4. Ten times per year, a facility receives chlorine in 1 ton cylinders. Half of the chlorine mixture is transferred to a tank to make a bleaching mixture, where its concentration drops below the de minimis level, which is then sold and distributed in commerce. One fourth of the original mixture is used to treat the drinking water consumed by employees. The remaining one fourth of the original mixture is used throughout the plant to clean process equipment. Wastewater from the cleaning and bleach production operations is released with chlorine levels well below the de minimis level. Which of the following is true?

a. All uses of the chlorine are subject to section 313 reporting because the concentration of the received mixture is well above the de minimis level and the threshold limit for otherwise use has been met.

b. Only the use of chlorine for drinking water is exempt from section 313 reporting.

c. Only the drinking water and cleaning operations will be exempt from section 313 reporting due to the personal use and routine maintenance exemptions, respectively.

d. The drinking water and cleaning uses are covered under the personal use and routine maintenance exemptions, respectively. The bleach production operation and the wastewaters generated in conjunction with this operation are not exempt from section 313 reporting; however, the wastewaters from the cleaning operations are exempt.

EXERCISE #4

SECTION 313 CASE STUDY: COLUMBUS PLANT

Determining Reporting Thresholds

Facility Description and Chemical Usage

Darcy Corp. operates adjacent plants at a site in central Ohio: Plant 1 manufactures industrial refrigeration units and Plant 2 manufactures molded plastic components for a variety of consumer product applications. Plant 1 employs a staff of 1,600 employees. Plant 2 employs a staff of 800 full-time employees. The two plants operate independently.

Plant 1 uses Hi-Copper Brass Tubing (90.0 percent copper, 9.2 percent zinc) in the manufacture of the air conditioners' components. The tubing is cut, bent into the appropriate shapes, and incorporated into the air conditioning units. The purchasing department indicates that Plant 1 received 100,000 pounds of Hi-Copper Brass Tubing in the reporting year.

One of the refrigerants used by Plant 1 in its products is HCFC-22 (>98.0 percent pure). The A100 series of refrigeration units use HCFC-22. In the reporting year, the facility produced 240 of these units, each of which contains 100 pounds of HCFC-22. Information provided by the HCFC-22 supplier indicates that they delivered 20,000 pounds to the site's HCFC-22 storage tank in the reporting year. Inventory records for the HCFC-22 storage tank indicated that the tank contained 15,000 pounds at the beginning of the reporting year and 5,000 pounds at the end of the reporting year.

Plant 1 paints certain refrigeration unit components using a paint that contains 10 weight percent methyl-ethyl-ketone (MEK), a solvent. Paint booth logs indicate Plant 1 used 110,000 pounds of this paint in these painting operations.

Plant 2 uses a resin in an injection molding process to make various plastic components. Inventory records indicate that the facility used 300,000 pounds of the resin in the reporting year. The resin contains 4 weight percent of barium hydroxide and 1.5 percent elemental zinc. Information obtained from the vendor indicates that during the curing of the resin, 1 pound of ammonia is generated for each 100 pounds of resin used.

Inventory records indicate that 10,000 pounds of an adhesive that contains 12 weight percent MEK was used as a solvent in the adhesive application operations in the reporting year.

In the reporting year, a contractor painted the exterior and interior of all buildings on site. The contractor reported that their paint usage in the reporting year was 20,000 pounds, containing 5 weight percent MEK.

In the reporting year, remediation of soil contaminated with 1,1,1-trichloroethane (TCA) and 2-butanone was conducted with a soil vapor extraction (SVE) system. After being processed through an activated carbon adsorption unit that is 99 percent efficient in capturing the organic emissions, the exhaust from the SVE system is emitted to the air through a stack. The SVE system is estimated to extract from the ground and send to the activated carbon adsorption unit 20 pounds of TCA and 10 pounds of 2-butanone every month. The carbon is replaced every 10 months and the spent carbon is sent to ACME for incineration.

Using the above information, complete the following tasks to determine which chemicals will require you to prepare a Form R report.

1. Identify each listed chemical or chemical category manufactured, processed, and/or otherwise used at the facility that you should evaluate for threshold determinations.

2. Use the attached threshold determination worksheets to determine which toxic chemicals meet or exceed an applicable threshold for manufacture, process, or otherwise use.

3. Prepare Part II, Sections 1, 2 and 3 of Form R for each toxic chemical that exceeds an applicable threshold.

Make any necessary assumptions and be prepared to identify the assumptions you have made and the approach you used in completing this exercise.

OPTIONAL SECTION 313 REPORTING THRESHOLD WORKSHEET

Facility Name: _____ **Date Worksheet Prepared:** _____
Toxic Chemical or Chemical Category: _____ **Prepared By:** _____
Reporting Year: _____

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs):		
				Manufactured	Processed	Otherwise Used
1.						
2.						
3.						
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) _____ lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1.					
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) _____ lbs.

Step 3. Calculate the amount subject to threshold: ($A - A_1$) _____ lbs. ($B - B_1$) _____ lbs. ($C - C_1$) _____ lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all non-exempt activities. Do not submit this worksheet with Form R. Retain for your records.

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS NUMBER (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical
a. ☐ Produce b. ☐ Import		
If produce or import:		
c. ☐ For on-site use/processing	a. ☐ As a reactant	a. ☐ As a chemical processing aid
d. ☐ For sale/distribution	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
e. ☐ As a byproduct	c. ☐ As an article component	c. ☐ Ancillary or other use
f. ☐ As an impurity	d. ☐ Repackaging	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year)(enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1					
5.3.2					
5.3.3					
5.4.1	Underground Injection on-site to Class I Wells	NA ☐			
5.4.2	Underground Injection on-site to Class II-V Wells	NA ☐			

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

OPTIONAL SECTION 313 REPORTING THRESHOLD WORKSHEET

Facility Name: _____ **Date Worksheet Prepared:** _____
Toxic Chemical or Chemical Category: _____ **Prepared By:** _____
Reporting Year: _____

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs):		
				Manufactured	Processed	Otherwise Used
1.						
2.						
3.						
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) _____ lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1.					
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) _____ lbs.

Step 3. Calculate the amount subject to threshold: ($A - A_1$) _____ lbs. ($B - B_1$) _____ lbs. ($C - C_1$) _____ lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all non-exempt activities. Do not submit this worksheet with Form R. Retain for your records.

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS NUMBER (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:

a. ☐ Produce b. ☐ Import

If produce or import:

c. ☐ For on-site use/processing
d. ☐ For sale/distribution
e. ☐ As a byproduct
f. ☐ As an impurity

3.2 Process the toxic chemical:

a. ☐ As a reactant
b. ☐ As a formulation component
c. ☐ As an article component
d. ☐ Repackaging

3.3 Otherwise use the toxic chemica

a. ☐ As a chemical processing aid
b. ☐ As a manufacturing aid
c. ☐ Ancillary or other use

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year)(enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1					
5.3.2					
5.3.3					
5.4.1	Underground Injection on-site to Class I Wells	NA ☐			
5.4.2	Underground Injection on-site to Class II-V Wells	NA ☐			

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pound

OPTIONAL SECTION 313 REPORTING THRESHOLD WORKSHEET

Facility Name: _____ **Date Worksheet Prepared:** _____
Toxic Chemical or Chemical Category: _____ **Prepared By:** _____
Reporting Year: _____

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs):		
				Manufactured	Processed	Otherwise Used
1.						
2.						
3.						
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) _____ lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1.					
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) _____ lbs.

Step 3. Calculate the amount subject to threshold: ($A - A_1$) _____ lbs. ($B - B_1$) _____ lbs. ($C - C_1$) _____ lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all non-exempt activities. Do not submit this worksheet with Form R. Retain for your records.

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS NUMBER (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:

a. ☐ Produce b. ☐ Import

If produce or import:

c. ☐ For on-site use/processing
d. ☐ For sale/distribution
e. ☐ As a byproduct
f. ☐ As an impurity

3.2 Process the toxic chemical:

a. ☐ As a reactant
b. ☐ As a formulation component
c. ☐ As an article component
d. ☐ Repackaging

3.3 Otherwise use the toxic chemi

a. ☐ As a chemical processing aid
b. ☐ As a manufacturing aid
c. ☐ Ancillary or other use

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year)(enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1					
5.3.2					
5.3.3					
5.4.1	Underground Injection on-site to Class I Wells	NA ☐			
5.4.2	Underground Injection on-site to Class II-V Wells	NA ☐			

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 po

OPTIONAL SECTION 313 REPORTING THRESHOLD WORKSHEET

Facility Name: _____ **Date Worksheet Prepared:** _____
Toxic Chemical or Chemical Category: _____ **Prepared By:** _____
Reporting Year: _____

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs):		
				Manufactured	Processed	Otherwise Used
1.						
2.						
3.						
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) _____ lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1.					
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) _____ lbs.

Step 3. Calculate the amount subject to threshold: ($A - A_1$) _____ lbs. ($B - B_1$) _____ lbs. ($C - C_1$) _____ lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all non-exempt activities. Do not submit this worksheet with Form R. Retain for your records.

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS NUMBER (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemic
a. ☐ Produce b. ☐ Import		
If produce or import:		
c. ☐ For on-site use/processing	a. ☐ As a reactant	a. ☐ As a chemical processing aid
d. ☐ For sale/distribution	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
e. ☐ As a byproduct	c. ☐ As an article component	c. ☐ Ancillary or other use
f. ☐ As an impurity	d. ☐ Repackaging	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year)(enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1					
5.3.2					
5.3.3					
5.4.1	Underground Injection on-site to Class I Wells	NA ☐			
5.4.2	Underground Injection on-site to Class II-V Wells	NA ☐			

OPTIONAL SECTION 313 REPORTING THRESHOLD WORKSHEET

Facility Name: _____ **Date Worksheet Prepared:** _____
Toxic Chemical or Chemical Category: _____ **Prepared By:** _____
Reporting Year: _____

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs):		
				Manufactured	Processed	Otherwise Used
1.						
2.						
3.						
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) _____ lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1.					
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) _____ lbs.

Step 3. Calculate the amount subject to threshold: ($A - A_1$) _____ lbs. ($B - B_1$) _____ lbs. ($C - C_1$) _____ lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all non-exempt activities. Do not submit this worksheet with Form R. Retain for your records.

OPTIONAL SECTION 313 REPORTING THRESHOLD WORKSHEET

Facility Name: _____ Date Worksheet Prepared: _____

Toxic Chemical or Chemical Category: _____ Prepared By: _____

Reporting Year: _____

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs):		
				Manufactured	Processed	Otherwise Used
1.						
2.						
3.						
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) _____ lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1.					
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) _____ lbs.

Step 3. Calculate the amount subject to threshold: ($A - A_1$) _____ lbs. ($B - B_1$) _____ lbs. ($C - C_1$) _____ lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all non-exempt activities. Do not submit this worksheet with Form R. Retain for your records.

OVERVIEW OF FORM R

OVERVIEW OF FORM R REPORT

- Two principal types of information
  - Facility-specific
  - Chemical-specific
- One report must be submitted for each Section 313 chemical or chemical category to EPA and to the SERC/TERC

PART I: FACILITY INFORMATION

- Identifies the facility
  - Name and address
  - TRI facility identification number
- Provides key data for linking information to other databases
  - SIC code(s)
  - Identification numbers (RCRA, NPDES, Dun & Bradstreet, Underground Injection Control)
- Identifies key personnel
  - Technical contact
  - Public contact

PART I. SECTIONS 1 AND 2

- Reporting year is the calendar year to which the reported information applies; not the year in which the report is submitted
- Trade secret submissions require substantiation
- Two reports are required for trade secret submissions:
  - One complete
  - One "sanitized" version
- Separate process for national security claims

PART I. FACILITY IDENTIFICATION INFORMATION			
SECTION 1. REPORTING YEAR 19__			
SECTION 2. TRADE SECRET INFORMATION			
2.1	Are you claiming the toxic chemical identified on page 2 trade secret? ☐ Yes (Answer question 2.2; Attach substantiation forms) ☐ No Do not answer 2.2; go to Section 3	2.2	Is this copy ☐ Sanitized ☐ Unsanitized (Answer only if "YES" in 2.1)

PART I. SECTION 3

- **Private-sector facilities**
  - **An original signature is required**
  - **Name must be legible (printed or typed)**
  - **Title of the official who signs is also required**

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)		
I hearby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.		
Name and official title of owner/operator or senior management official:	Signature:	Date signed:

PART I. SECTION 4.1

- **Private-sector facilities**
  - **All parts of the facility name and address are essential**
  - **Mailing address required if different from street address**
  - **TRI facility identification number (if a form was filed in a previous reporting year) or "New Facility" (if reporting for the first time)**

SECTION 4. FACILITY IDENTIFICATION	TRI Facility ID Number
4.1 Facility or Establishment Name	Facility or Establishment Name or Mailing Address (if different from street address)
Street	Mailing Address
City/County/State/Zip Code	City/County/State/Zip Code

PART I. SECTION 4.1

- **Federal facilities**
  - **Enter name of Federal department or agency standard acronym followed by the site name (see guidance)**

SECTION 4. FACILITY IDENTIFICATION		
4.1	Facility or Establishment Name: U.S. DOE Kansas City Plant (EXAMPLE)	TRI Facility ID Number
	Street Address	
	City	County
	State	Zip Code
	Mailing Address (if different from street address)	PUT LABEL HERE
	City	
	State / Zip Code	

PART I. SECTION 4.2 THROUGH 4.4

- **Specify whether the report covers all or part of the facility**
  - **GOCOs should check "a" or "b"**
- **List name and phone number**
  - **Technical contact - should be able to explain data to EPA**
  - **Public contact - should be able to represent the facility's data to the public**

SECTION 4. FACILITY IDENTIFICATION (Continued)			
4.2	This report contains information for: (Important: check a or b; check c if applicable)	a. ☐ An entire facility b. ☐ Part of a facility c. ☐ A Federal facility	
4.3	Technical Contact Name		Telephone Number (include area code)
4.4	Public Contact Name		Telephone Number (include area code)

PART I. SECTION 4.5 THROUGH 4.6

- **Enter 4-digit SIC code(s)**
  - **Use SIC code(s) that best describes activities being conducted**
- **Supply latitude and longitude coordinates**

4.5	SIC Code(s) (4-digits)	a.	b.	c.	d.	e.	f.

4.6	Latitude	Degrees	Minutes	Seconds	Longitude	Degrees	Minutes	Seconds

PART I. SECTION 4.7 THROUGH 4.10

- **Enter the specified identification numbers or "NA" if not applicable**
  - **Enter Dun and Bradstreet number(s)**
  - **EPA ID numbers (assigned mainly for RCRA-covered facilities)**
  - **NPDES permit number(s)**
  - **Underground Injection Well Code (UIC) I.D. number(s)**

4.7	Dun & Bradstreet Number(s) (9 digits)	4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	4.9	Facility NPDES Permit Number(s) (9 characters	4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
a.		a.		a.		a.	
b.		b.		b.		b.	

PART I. SECTION 5

- **Private-sector and GOCO facilities**
  - Enter complete name and Dun & Bradstreet number of parent company
- **Federal facilities**
  - Enter the complete name of department or agency for parent company (e.g., U.S. Department of Interior)
  - Check "NA" for Dun & Bradstreet number of parent company

SECTION 5. PARENT COMPANY INFORMATION				
5.1	Name of Parent Company	☐ NA		
5.2	Parent Company's Dun & Bradstreet Number	☐ NA	(9 digits)	

PART II: CHEMICAL-SPECIFIC INFORMATION

- **Identifies the Section 313 chemical and its uses at the facility**
  - Chemical identity
  - Activities and uses of the Section 313 chemical
  - Maximum amount on-site at one time
- **Identifies quantities released and waste management practices**
  - Total release of the Section 313 chemical to each medium
  - Transfers of waste to off-site locations (excluding transfers for sale)
  - On-site waste treatment methods and efficiency(ies)
- **Identifies other waste management and source reduction activities**

PART II. SECTIONS 1 AND 2: TOXIC CHEMICAL OR MIXTURE COMPONENT IDENTITY

SECTION 1. TOXIC CHEMICAL IDENTITY		(Important: DO NOT complete this section if you completed Section 2 below.)
1.1	CAS Number (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)	
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)	
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes." Generic name must be structurally descriptive.)	

- **Complete either Section 1.1 & 1.2 or Section 1.3 or Section 2**
- **Enter CAS number or category code and name of Section 313 chemical or chemical category (except on "sanitized" form)**
- **Enter generic name only if claiming Section 313 chemical name as a trade secret (Section 1.3)**

SECTION 2. MIXTURE COMPONENT IDENTITY		(Important: DO NOT complete this section if you complete Section 1 above.)
2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)	

- **If supplier claims trade secret, report generic name by supplier**

PART II. SECTION 3: ACTIVITIES AND USES OF THE CHEMICAL AT THE FACILITY (GENERAL)

- **Specify use(s) of the Section 313 chemical: manufacture, process, or otherwise use**
- **Report only activities taking place at reporting facility**
- **Check all applicable boxes**

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:	a. ☐ As a reactant	a. ☐ As a chemical processing aid
c. ☐ For on-site use/processing	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
d. ☐ For sale/distribution	c. ☐ As an article component	c. ☐ Ancillary or other use
e. ☐ As a byproduct	d. ☐ Repackaging	
f. ☐ As an impurity		

PART II. SECTION 4: MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING YEAR

- Insert appropriate code from instructions indicating the maximum quantity on-site
- Use maximum total amount present at one time during reporting year, even if Section 313 chemical is present at more than one location at the facility
- Include amounts in storage, processes, and wastes

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR		
4.1	[ ] (Enter two-digit code from instruction package.)	

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- Total aggregate releases of Section 313 chemical to the environment from the facility during calendar year
  - Report <u>total</u> releases of Section 313 chemical to each environmental medium
- In column A, Total Releases, report total quantity (range code can be used for quantities less than 1,000 pounds)
  - A = 1 - 10 pounds
  - B = 11 - 499 pounds
  - C = 500 - 999 pounds

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Basis of estimate codes**
  - **Monitoring data (M) - actually measuring chemical reported**
  - **Mass balance (C) - input equals output**
  - **Emission factor (E) - published chemical-specific emission rates**
  - **Other approaches and engineering estimates (O) - used whenever data are modified**
- **Use the code for the method used to estimate the largest portion of the release**

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Section 5.1 Fugitive or Non-Point Air Emissions**
  - **Enter total fugitive releases of Section 313 chemical in column A, including leaks, evaporative losses, building ventilation, or other non-point air emissions**
  - **Section 5.2 Stack or Point Air Emissions**
  - **Enter total releases to air from point sources, including stacks, vents, pipes, ducts, storage tanks, or other confined air streams**

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM					
			A. Total Release (pounds/year) (enter range from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	☐NA			
5.2	Stack or point air emissions	☐NA			

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Section 5.3 Releases to Streams or Water Bodies**
  - Enter names of streams or water bodies to which your facility directly discharges the Section 313 chemical
  - Enter total amount of releases to each receiving stream or water body in column A; include amounts from stormwater runoff, if available
  - Indicate in column C the percentage of the total quantity (by weight) of the Section 313 chemical contributed by stormwater

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM				
5.3	Discharges to receiving streams or water bodies (enter one name per box)			
Stream or Water Body Name		A. Total Release (pounds/year) (enter range from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.3.1				
5.3.2				
5.3.3				

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Section 5.4.1 Underground Injection to Class I wells**
  - Enter total amount of Section 313 chemical injected into Class I wells at facility in column A and basis of estimate code in column B
- **Section 5.4.2 Underground Injection to Class II - V wells**
  - Enter total amount of Section 313 chemical injected into Class II - V wells at facility in column A and basis of estimate code in column B

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM					
			A. Total Release (pounds/year) (enter range from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.4.1	Underground injections on-site to Class I Wells	☐NA			
5.4.1	Underground injections on-site to Class II-V Wells	☐NA			

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Section 5.5 Releases to Land On-Site**
  - Four pre-defined categories for releases to land within facility boundaries: RCRA Subtitle C landfills (5.51A), other landfills (5.5.1B), land treatment/application farming (5.5.2), surface impoundment (5.5.3)
  - Any other disposal (5.5.4) includes spills or leaks of the Section 313 chemical to land
  - Quantities of Section 313 chemicals released to air or water after initial release to land (e.g., volatilization from surface impoundments) are not included here

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM				
		NA	A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)
5.5	Disposal to land on-site			
5.5.1A	RCRA Subtitle C landfills	☐		
5.5.1B	Other landfills	☐		
5.5.2	Land treatment/application farming	☐		
5.5.3	Surface impoundment	☐		
5.5.4	Other disposal	☐		

PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- **Includes both off-site location information and quantities of Section 313 chemicals transferred to off-site locations**
- **Report quantities of a Section 313 chemical sent off-site to any POTW or other location for recycling, energy recovery, waste treatment, or disposal**
- **Report only total quantity of a Section 313 chemical transferred off-site, not entire waste**
- **In Sections 6.1.A.1 and 6.2.A, Total Transfers, report total quantity (range codes can be used for quantities less than 1,000 pounds)**
  - **A = 1 - 10 pounds**
  - **B = 11 - 499 pounds**
  - **C = 500 - 999 pounds**

PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- **Section 6.1 Discharges to Publicly Owned Treatment Works**
  - **Enter total quantity of the Section 313 chemical transferred to all POTWs and basis of estimate**

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS	
6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)	
6.1.A Total Quantity Transferred to POTWs and Basis of Estimate	
6.1.A.1 Total Transfers (pounds/year) (enter range code or estimate)	6.1.A.2 Basis of Estimate (enter code)

PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- **Section 6.1.B POTW Name and Location**
  - **Include name and address of each POTW**
  - **Photocopy page 3 if reporting discharges to more than 2 POTWs**

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS							
6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)							
6.1.B. __	POTW Name						
	POTW Address						
City		State		County		Zip	
6.1.B. __	POTW Name						
	POTW Address						
City		State		County		Zip	

PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- **Section 6.2 Transfers to Other Off-Site Locations**
  - **Include name, address, and EPA identification (RCRA ID) number**
  - **Enter quantities, basis of estimate, and codes for multiple activities (waste treatment, disposal, recycling, and energy recovery) in Rows 1 through 4**
  - **Photocopy page 4 if reporting more than 2 off-site transfer locations**

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS							
6.2. OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)							
Off-site Location Name							
Off-site Address							
City		State		County		Zip	
Is location under control of reporting facility or parent company? ☐ Yes ☐ No							
A. Total Transfers (pounds/year) (enter range code or estimate)		B. Basis of Estimate (enter code)		C. Type of Waste Treatment Disposal/ Recycling/Energy Recovery (enter code)			
1.		1.		1.M			
2.		2.		2.M			
3.		3.		3.M			
4.		4.		4.M			

PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

- **General waste stream type containing the Section 313 chemical, treatment method(s), influent concentration range, estimate of treatment efficiency, and indication if information is based on operating data**
- **On-site waste treatment information only**
- **Include amounts of Section 313 chemical that are incinerated**
- **Only data element in Form R focusing on the entire waste stream rather than the Section 313 chemical in the waste stream**

PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b 1 2 3 4 5 6 7 8	7A.1c	7A.1d	7A.1e
			%	Yes ☐ No ☐

PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

- **Section 7A.a General Waste Stream**
  - Enter a waste stream code for each waste treatment method sequence
    - » There are four waste stream types: Gaseous, Wastewater, Liquid Waste, Solid Waste
- **Section 7A.b Waste Treatment Method(s) Sequence**
  - Enter code(s) from EPA instructions document for on-site waste treatment method(s) used
  - Enter code(s) regardless of whether waste treatment actually affected the Section 313 chemical
  - Report waste treatment method(s) used on aggregate waste stream as single stream
  - If applicable, enter codes in sequence in which they occur

PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

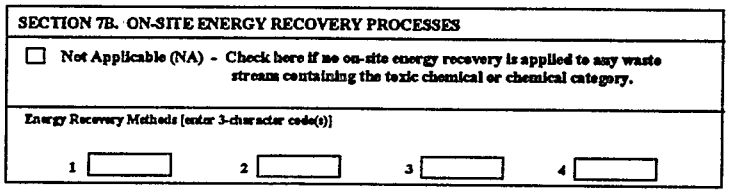
- Section 7A.c Range of Influent Concentration
  - Use range of concentration of the Section 313 chemical in waste stream as it typically enters treatment equipment
  - Enter code(s) for concentration ranges (parts per million) from EPA instructions document
- Section 7A.d Waste Treatment Efficiency Estimates
  - Waste treatment efficiency expressed as percent removal of Section 313 chemical from waste stream through biological degradation, chemical conversion, or physical removal
    - » Use overall efficiency of waste treatment sequence, not a specific waste treatment method
    - » Use percent removal of Section 313 chemical only, not other constituents of the waste stream

PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

- Section 7A.e Based on Operating Data?
  - Check "yes" if efficiency estimate is based on monitoring from typical operating conditions
  - Check "no" if efficiency estimate is based on published data for similar processes or equipment supplier's literature, or if the influent or effluent waste comparison or the flow rate was otherwise estimated

PART II. SECTION 7B: ON-SITE ENERGY RECOVERY PROCESSES

- Enter on-site energy recovery methods for Section 313 chemical
  - Section 313 chemical must be combustible and have a heating value high enough to sustain combustion (e.g., 5,000 BTU/lb.)
  - Combustion unit is integrated into an energy recovery system (i.e., industrial furnace, industrial kiln, or boiler)
- Enter codes in descending order by quantities combusted



SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

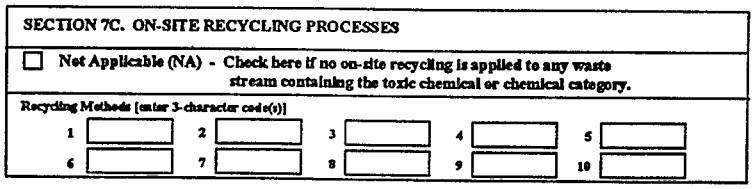
☐ Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code(s)]

1 2 3 4

PART II. SECTION 7C: ON-SITE RECYCLING PROCESSES

- Enter methods used for on-site recycling of Section 313 chemical
  - Codes for recycling methods used are found in EPA instructions document
  - Do not include energy recovery processes
- Enter codes in descending order by quantities recycled



SECTION 7C. ON-SITE RECYCLING PROCESSES

☐ Not Applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1 2 3 4 5

6 7 8 9 10

PHOTOCOPYING PAGES OF FORM R

- Pages of Form R may be photocopied if additional space is necessary to complete the following sections
  - Section 6.1: Transfers to POTWs
  - Section 6.2: Transfers to Other Off-Site Locations
  - Section 7A: Waste Treatment Methods and Efficiency
- When photocopying pages, you must complete the box on each page to indicate the number of copies you are attaching
- For the page being photocopied, enter in the left box the total number of pages submitted including the original

  original + number photocopied = total pages submitted

  - In the second box, indicate the position of the individual page

Example

If additional pages of Part II, Sections 6.2/7A are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Sections 6.2/7A page this is, here. ☐ (example: 1.2.3. etc.)

AUTOMATED FORM R SOFTWARE

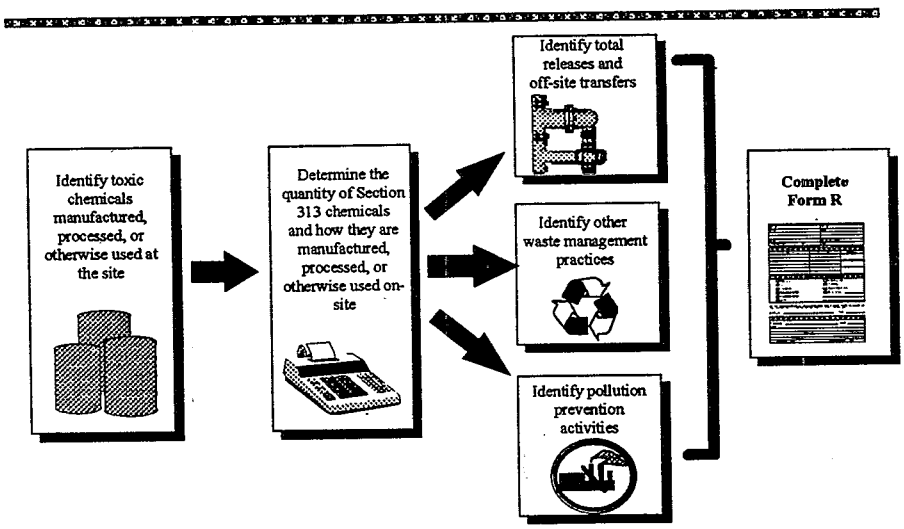
- Advantages
  - Reduce risk of error by reporting sites
  - Reduce data entry error by EPA
  - Reduced data entry redundancy
  - Menu-driven screens with special "hot" keys displayed
  - "Pick lists" containing valid Form R reporting codes
  - "Real-time" error checking and validation
- Submission of Form R data on magnetic media is encouraged but not required

AUTOMATED FORM R SOFTWARE

- **Technical Support**
  - **Phone: 703-816-4434**
  - **Fax: 703-816-4466**
  - **e-mail: tris.user.support@epcra.org**

TRI RELEASE REPORTING

THE EPCRA SECTION 313 REPORTING PROCESS



TRI RELEASE REPORTING

- Importance of a structured process for release reporting
  - Ensures accurate data
  - Reduces burden in completing Form R report
    - » Systematic approach reduces burden over time
    - » Team approach distributes responsibility
  - Ensures compliance with TRI reporting requirements

RELEASE REPORTING METHOD

- Identify potential release sources
- Identify available data and tools
- Collect data
- Estimate quantity of chemical being released
- Document your work

TOOLS AND DATA SOURCES FOR RELEASE CALCULATIONS

- Process flow diagrams
- Waste management manifests, invoices, and waste profiles
- Environmental monitoring data
- Permit applications
- RCRA, NPDES, CAA, CERCLA and other env. reports
- Engineering calculations and other notes

CALCULATING RELEASES

- Consider all sources (routine and non-routine)
- Reasonable estimates are required by law
- Facility determines best approach
- Data and approach must be documented

TECHNIQUES FOR ESTIMATING CHEMICAL QUANTITIES

- Use of monitoring data
- Mass balance calculation
- Use of emission factors
- Engineering calculations

ANALYSIS OF MONITORING DATA

- Product of measured concentrations, volumetric flow rates, and density equals pounds of chemical released per year
- Most commonly used for wastewater (Discharge monitoring reports (DMRs))
- Use Basis of Estimate code "M" if calculations based primarily on monitoring data

MASS BALANCE CALCULATION

- Mass Balance is based on the law of conservation of mass
- Input + Generation = Output + Amount Reacted + Accumulation
- Most useful in simple situations
- Use Basis of Estimate code "C"
  - Example: Use of a mass balance to estimate fugitive air emissions from storage containers and process equipment

USE OF EMISSION FACTORS

- Chemical-specific values used to describe the quantity released as a function of:
  - Specific process used
  - Specific equipment used
- Available in *Compilation of Air Pollutant Emission Factors (AP-42)*
- Use Basis of Estimate code "E"

ENGINEERING CALCULATIONS

- Calculations based on best engineering judgment/assumptions
- Use of non-chemical-specific emission factors
- Use of non-published emission factors
- Use Basis of Estimate code "O"

SIGNIFICANT FIGURES

- EPA recommends using two significant figures when reporting releases and off-site transfers
- Benefit of using 2 significant figures: more forgiving estimates
- Example: Off-site transfer of 259,442 pounds
  - What if 259,400 lbs reported and later found an extra 10 lbs?
  - What if 260,000 lbs reported and later found extra 5,000 lbs?
- If estimate imprecise, consider one significant figure or range code:
  - A= 1-10 lbs; B = 11-499 lbs; C = 500-999 lbs

"NA" VS. "0"

- Use "NA" (not applicable) when no possibility of Section 313 chemical being released to that media
  - Example: Facility has no on-site landfill
- Use "0" when no release to specific media occurs, but is possible
  - Example: Discharge to water is zero; however, release possible if control equipment fails
  - Must indicate a Basis of Estimate code (i.e., M, C, E, O)

FUGITIVE EMISSIONS

- Part II, Section 5.1: Fugitive or non-point air emissions
  - Approach: ID potential sources –> ID data/tools –> estimate
- Data Sources/Tools
  - Engineering calculations
  - Emission factors
  - Monitoring data

STACK EMISSIONS

- Part II, Section 5.2: Stack or point-source air emissions
  - Approach: ID potential sources --> ID data/tools --> estimate
  - Data Sources/Tools
    - » Air permit applications
    - » CAA Title V air inventories
    - » Process and production data
    - » Engineering calculations
    - » Mass balance
    - » Emission factors

WASTEWATER DISCHARGE SOURCES

- Water release sources (Sections 5.3 and 6.1)
  - Wastewater treatment facility discharge
  - Storm drains

WASTEWATER DISCHARGES

- **Part II, Section 5.3: Release to stream or water body and Part II, Section 6.1: Discharges to POTW**
  - **Approach: ID potential sources --> ID data/tools --> estimate**
  - **Straightforward if monitoring data exist**
  - **If no data exist, estimate based on process knowledge and/or mass balance calculation**
- **Data Sources**
  - **DMRs**
  - **NPDES permits**

CALCULATING WASTEWATER DISCHARGES

- **Calculate the pounds of benzene discharged using the following data concerning wastewater discharges of benzene:**

Date	Conc. (mg/L)	Flow (MGD)
3/1	1.0	1.0
9/8	0.2	0.2

MGD = million gallons per day

1 mg/L = 8.33 lbs/million gal

RELEASES TO LAND SOURCES

- Potential on-site land release sources (Sections 5.4 through 5.5.4)
  - Landfills and surface impoundments
  - Spills, leaks

WASTE RELEASED TO LAND ON-SITE

- Part II, Section 5.5: Releases to land
  - » 5.5.1A RCRA Subtitle C Landfills
  - » 5.5.1B Other Landfills
  - » 5.5.2 Land treatment/application farming
  - » 5.5.3 Surface impoundment
  - » 5.5.4 Other disposal
  - Approach: ID potential sources --> ID data/tools -->estimate
- Data sources:
  - Operating records
  - Spill reports
  - Process knowledge

SECTION 313 CHEMICAL MIGRATION

- Migration of the Section 313 chemical contained in waste disposed or released
  - Migration of reportable chemical within one environmental medium (e.g., leachate from surface impoundment)
    - » Only required to report initial release of chemical to the environment
  - Migration of chemical from one environmental medium to another (e.g., volatilization from a landfill)
    - » Release estimates should be calculated and reported appropriately in Part II, Sections 5, 6, and 8 of Form R

STORAGE OF WASTE

- Storage of wastes on the land
  - Regular shipment schedule
    - » Must transfer the waste off-site before that reporting year's Form R report is submitted or July 1, whichever comes first
  - No regular shipment schedule
    - » Report material transferred off-site during the year in Part II, Section 6 of Form R
    - » Report material added to pile that remains on-site during the year as the quantity released to land, Part II, Section 5.5.4 of Form R
  - Waste material stored on-site indefinitely
    - » Report material added to pile that remains on-site during the year as the quantity released to land, Part II, Section 5.5.4 of Form R

ON-SITE WASTE MANAGEMENT

- Waste treatment methods (Section 7)
  - Air pollution control devices
  - Energy recovery devices
  - Wastewater treatment processes
  - Recycling devices

ESTIMATING WASTE TREATMENT EFFICIENCY

- Part II, Section 7A: On-site waste treatment methods and efficiency
  - Report waste treatment steps regardless of removal efficiency
  - Report all non-identical parallel steps
  - Report all sequential steps
  - Report influent concentration only at first step of a sequence
  - Indicate overall waste treatment efficiency of process
  - Indicate a basis of estimate for overall efficiency (not required for initial or intermediate sequential steps)

ON-SITE ENERGY RECOVERY

- **Part II, Section 8.2: On-site energy recovery**
  - Quantity of Section 313 chemical used for energy recovery <u>on-site</u>
    - » Quantity *actually* combusted in the energy recovery unit
      - – Not the quantity entering the unit
  - Section 313 chemical must be combustible and have a heating value high enough to sustain combustion (e.g., 5,000 BTU/lb.)
  - Approach: ID potential sources -->ID data/tools --> estimate
- **Data sources**
  - Engineering process specifications
  - Mass balance calculations

WASTE RECYCLED ON-SITE

- **Part II, Section 8.4: Recycling**
  - Includes total quantity of Section 313 chemical *recovered* from the recycling process and made available for further use
  - Approach: ID potential sources --> ID data/tools -->estimate
- **Potential on-site recycling sources**
  - Solvent recovery units
  - Oil/water separators
- **Data sources:**
  - Operating records
  - Specifications (vendor, test data)
  - Process knowledge
  - Mass balance

WASTE TREATED ON-SITE

- Part II, Section 8.6: Treatment
  - Report quantity destroyed (or converted to non-listed chemical)
  - Approach: ID potential sources --> ID data/tools -->estimate
- Potential sources for treatment on-site
  - Remediation activities
  - Wastewater treatment
- Data sources:
  - Operating records
  - Specifications (vendor, test data)
  - Process knowledge

OFF-SITE WASTE MANAGEMENT

- Hazardous waste manifests and vendor receipts
  - Identify final disposition of Section 313 chemical
    - » Disposal
    - » Waste treatment
    - » Energy recovery
    - » Recycling
- RCRA reports
- Waste characterization - analyses, profiles, TCLP data

MAXIMUM QUANTITY ON-SITE

- **Part II, Section 4.1: Maximum amount on-site at any time during the calendar year**
  - **Not the same as Tier II maximum amount on site**
  - **Tier II is usually by mixtures, Form R is chemical-specific**
  - **Tier II excludes hazardous wastes, Form R does not**
- **Data sources**
  - **Tier II records/calculations**
  - **Waste inventory data**

BEST PRACTICES

- **Begin early**
  - **Implement a program to gather "real-time" data on releases**
  - **Collect information throughout reporting year**
- **Team approach**
  - **Include all relevant personnel (e.g., engineering, environmental, waste management, operations)**
  - **Distribute the responsibility**

BEST PRACTICE: RECORDKEEPING

- Importance of good recordkeeping
  - Detailed records improve reporting accuracy and data quality
  - Well-labeled calculations and engineering assumptions serve as standard operating procedures for future years
    - » Reduce replication
    - » Ensure consistency
- Requirements
  - All records used to complete Form R reports must be kept for three years (40 CFR 372.10)
  - EPA will review records during a data quality audit

REFERENCE SOURCES

- *Estimating Releases and Waste Treatment Efficiencies (EPA 560/4-88-002)*
- *AP-42: Compilation of Air Pollutant Emission Factors*
- *Perry's Chemical Engineer's Handbook*
- *CRC Handbook of Chemistry and Physics*
- *Lange's Handbook of Chemistry*
- Technology Transfer Network (Modem (919)541-5742, and Internet address: http://ttnwww.rtpnc.epa.gov)
  - AP-42
  - Water 8/ChemDat 8 programs
  - TANKS program

EXERCISE #5

SECTION 313 CASE STUDY: COLUMBUS PLANT

Estimating Releases, Off-site Transfers, and Waste Treatment Efficiencies

Problem Statement

The threshold determination performed for MEK (included in the solution to Exercise #4) identified the need for the Columbus Plant to file a Form R for MEK. Use the information below and the solution to Exercise #4 to do the following:

(A) Prepare a flow diagram for MEK at the facility;

(B) Calculate the quantity of MEK released to the various environmental media; and

(C) Complete Part II, Sections 5, 6, and 7 of EPA Form R for MEK on the blank form provided.

Make any necessary assumptions and be prepared to identify the assumptions you have made and the approach you used in completing this exercise.

Facility Description and Operations

Darcy Corp. operates adjacent plants at a site in central Ohio: Plant 1 manufactures industrial refrigeration units and Plant 2 manufactures molded plastic components for a variety of consumer product applications. Plant 1 employs a staff of 1,600 employees. Plant 2 employs a staff of 800 full-time employees. The two plants operate independently.

Plant 1 paints certain refrigeration unit components. In the reporting year, Plant 1 used 11,000 pounds of MEK in these painting operations. The painting operations are performed in booths with the air drawn through particulate filters and exhausted out a stack. Paint booth design documents indicate that the capture efficiency of the booth's air collection system was estimated to be 90 percent. Based on a review of the air emissions inventory and the engineering assumptions made in order to develop that inventory, the EPCRA contact decided that it would be more appropriate to assume that only 85 percent of the air emissions are stack emissions (to account for fugitive air losses from the paint containers and from waste paint containers). Industrial hygiene monitoring performed in the paint booths indicates that the concentration of MEK in the air is in the range of 30 to 110 ppm.

Hazardous waste manifests and analyses indicate that 900 pounds of MEK in waste paint was shipped to ACME Incineration (RCRA ID#OHD123456789, 1 Apple Street, Akron, Smith County, OH, 99999) for incineration and 100 pounds of MEK in paint-related waste (rags, empty containers, and waste filters) were shipped to Bob's Landfill (RCRA ID# OHD000123456, 2 Bee Street, Bloomington, Smith County, OH 99990) for disposal in a hazardous waste landfill.

Plant 2 performs no solvent-based painting, but does use an adhesive containing MEK. The adhesive is applied in an area with no air exhaust to a stack. Because of worker exposure concerns, testing was performed in the reporting year that determined that 84 percent of the MEK used in adhesive application operations resulted in air emissions. In the reporting year, 1,200 pounds of MEK was used in adhesive application operations. Hazardous waste manifests and analyses indicate that 200 pounds of MEK in adhesive-related waste was shipped to ACME for incineration. Empty waste adhesive containers are disposed of in the local sanitary landfill, District Sanitary Landfill (4 Douglas Street, Dayton, Smith County, OH 99934).

In the reporting year, a contractor painted the exterior and interior of all non-process related buildings on site. The contractor reported that their paint usage in the reporting year was 20,000 pounds, containing MEK at 5 weight percent. As a result of this operation, the contractor has estimated that 60 pounds of MEK in paint-related waste was shipped to Bob's Landfill for disposal.

In the reporting year, remediation of soil contaminated with 1,1,1-trichloroethane (TCA) and 2-butanone was conducted with a soil vapor extraction (SVE) system. After being processed through a multi-stage activated carbon adsorption unit that is 99 percent efficient (according to the manufacturer of the unit) in capturing the organic emissions, the exhaust from the SVE system is emitted to the air through a stack. The SVE system is estimated to extract from the ground and send to the activated carbon adsorption unit 20 pounds of TCA (at 100 ppm) and 10 pounds of 2-butanone (at 50 ppm) every month. The carbon is replaced every 10 months and the spent carbon is sent to ACME for incineration. The carbon was replaced in August of the prior reporting year, in June of the reporting year, and will be replaced again in April of the following reporting year.

Process wastewater from the painting operations in Plant 1 is combined and processed through a wastewater treatment facility. The wastewater treatment facility is a one-step neutralization tank, where caustic is added to raise the pH above 6. After treatment, the wastewater is discharged to Scioto River. Monitoring performed for the discharge permit application indicated that the following chemicals were present in the wastewater in the discharge from the treatment system: TCA at 10 milligrams per liter (mg/l) and 2-butanone at 2 mg/l. Plant records indicate that a total of 1,000,000 gallons of wastewater were discharged to the Scioto River in the reporting year. The wastewater treatment system was modeled using EPA's SIMS program to determine the fraction of these volatile components that are emitted to the air. This modeling indicated that 50% of 2-butanone entering the system is emitted as an air emission. Note that almost all of these emissions (greater than 99 percent) occur from the open-top neutralization tank. Note: 1 mg/l is equivalent to 8.34 pounds per million gallons.

Flow Diagram for MEK

Calculation Sheet

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1 CAS NUMBER ••• (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)

1.2 Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)

1.3 Generic Chemical Name (Important: Completenly if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1 Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3. Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:		
c. ☐ For on-site use/processing	a. ☐ As a reactant	a. ☐ As a chemical processing aid
d. ☐ For sale/distribution	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
e. ☐ As a byproduct	c. ☐ As an article component	c. ☐ Ancillary or other use
f. ☐ As an impurity	d. ☐ Repackaging	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1 ☐ (Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year)(enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1					
5.3.2					
5.3.3					
5.4.1	Underground Injection on-site to Class I Wells	NA ☐			
5.4.2	Underground Injection on-site to Class II-V Wells	NA ☐			

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this ☐ and indicate which Part II, Section 5.3 page this is, here ☐ (example: 1,2,3, etc.)

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

		NA	A. **Total Release** (pounds/year) (enter range code from instructions or estimate)	B. **Basis of Estimate** (enter code)
5.5	Disposal to land on-site			
5.5.1A	RCRA Subtitle C landfills	☐		
5.5.1B	Other landfills	☐		
5.5.2	Land treatment/application farming	☐		
5.5.3	Surface impoundment	☐		
5.5.4	Other disposal	☐		

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)

6.1.A. Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year) (enter range code or estimate)	**6.1.A.2 Basis of Estimate** (enter code)

6.1.B. ___ POTW Name							
POTW Address							
City		State		County		Zip	
6.1.B. ___ POTW Name							
POTW Address							
City		State		County		Zip	

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Section 6.1 page this is here ☐ (example: 1,2,3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2 ___ OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)							
Off-Site Location Name							
Off-Site Address							
City		State		County		Zip	

Is location under control of reporting facility or parent company? ☐ Yes ☐ No

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R•
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 6. 2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (continued)

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.M
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

6.2 ___ OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)

Off-Site Location Name

Off-Site Address

City | State | County | Zip

Is location under control of reporting facility or parent company? ☐ **Yes** ☐ **No**

A. Total Transfers (pound/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.M
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ **Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.**

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate•••••	e. Based on Operating Data?
7A.1a	7A.1b: 1 2 3 4 5 6 7 8	7A.1c	7A.1d	7A.1e
			%	Yes ☐ No ☐
7A.2a	7A.2b: 1 2 3 4 5 6 7 8	7A.2c	7A.2d	7A.2e
			%	Yes ☐ No ☐
7A.3a	7A.3b: 1 2 3 4 5 6 7 8	7A.3c	7A.3d	7A.3e
			%	Yes ☐ No ☐
7A.4a	7A.4b: 1 2 3 4 5 6 7 8	7A.4c	7A.4d	7A.4e
			%	Yes ☐ No ☐
7A.5a	7A.5b: 1 2 3 4 5 6 7 8	7A.5c	7A.5d	7A.5e
			%	Yes ☐ No ☐

If additional pages of Part II, Sections 6.2/7A are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Sections 6.2/7A page this is, here. ☐ (example: 1.2.3. etc.)

Range Codes: A= 1-10 pounds; B=11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

☐ Not Applicable (NA) - •Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code (s)]

1 ____ 2 ____ 3 ____ 4 ____

SECTION 7C. ON-SITE RECYCLING PROCESSES

☐ Not applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1 ____ 2 ____ 3 ____ 4 ____ 5 ____

6 ____ 7 ____ 8 ____ 9 ____ 10 ____

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

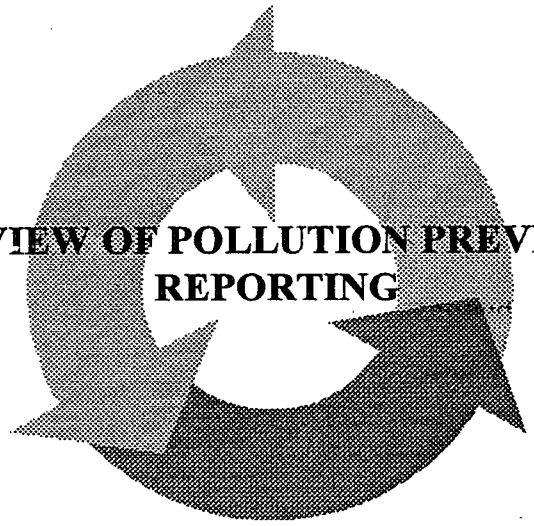
All quantity estimates can be reported using up to two significant figures.		Column A Prior Year (pounds/year)	Column B Current Reporting Year (pounds/year)	Column C Following Year (pounds/year)	Column D Second Following Year (pounds/year)
8.1	Quantity released				
8.2	Quantity used for energy recovery on-site				
8.3	Quantity used for energy recovery off-site				
8.4	Quantity recycled on-site				
8.5	Quantity recycled off-site				
8.6	Quantity treated on-site				
8.7	Quantity treated off-site				
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)				
8.9	Production ratio or activity index				

8.10	Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.			
	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1		a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

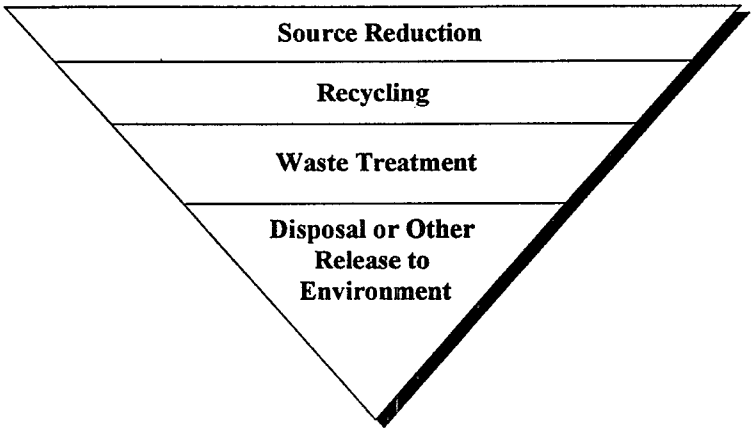
8.11	Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)	YES ☐	NO ☐

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.

OVERVIEW OF POLLUTION PREVENTION REPORTING



POLLUTION PREVENTION HIERARCHY



POLLUTION PREVENTION ACT OF 1990

- The Pollution Prevention Act of 1990 (PPA) sets a national policy for reducing pollution by:
  - Establishing a source reduction program
  - Assisting states in providing
    - » Information
    - » Technical assistance

POLLUTION PREVENTION ACT OF 1990

- PPA mandates EPA:
  - Establish a pollution prevention office
  - Establish a pollution prevention strategy
  - Provide matching grants to states for programs to promote source reduction
  - Establish a source reduction clearinghouse
  - Collect source reduction and recycling data through TRI Form R reports
  - Submit biennial program reports to Congress

SOURCE REDUCTION

Source reduction **means any practice "which (i) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and (ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants."**

Pollution Prevention Act of 1990
6603 (5)(A)

SOURCE REDUCTION

Excludes:

"(A)ny practice that alters the physical, chemical, or biological characteristics or total volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service."

Pollution Prevention Act of 1990
Section 6603(5)(B)

THINGS TO REMEMBER WHEN COMPLETING SECTION 8

- Key concepts
  - Waste streams
  - Process streams
  - Reportable recycling
- Develop consistent definitions for key terms
  - Across facility
  - Across agency/company

SOURCE REDUCTION AND RECYCLING

- Part II, Sections 8.1 through 8.7 of Form R
  - Column A - Prior Reporting Year Estimate
  - Column B - Current Reporting Year Estimate
  - Column C - Next Reporting Year Projection
  - Column D - Following Reporting Year Projection

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

If additional copies of page 4 are attached, indicate the total number of pages in this box ☐ and indicate which page 4 this is, here. ☐ (example: 1,2,3, etc.)

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

☐ Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code (s)]

1 ☐ 2 ☐ 3 ☐ 4 ☐

SECTION 7C. ON-SITE RECYCLING PROCESSES

☐ Not applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

All quantity estimates can be reported using up to two significant figures.		Column A Prior Year (pounds/year)	Column B Current Reporting Year (pounds/year)	Column C Following Year (pounds/year)	Column D Second Following Year (pounds/year)
8.1	Quantity released *				
8.2	Quantity used for energy recovery on-site				
8.3	Quantity used for energy recovery off-site				
8.4	Quantity recycled on-site				
8.5	Quantity recycled off-site				
8.6	Quantity treated on-site				
8.7	Quantity treated off-site				
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)				
8.9	Production ratio or activity index				

8.10	Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.			
	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1		a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.
8.11	Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)		YES ☐	NO ☐

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.

RELEASES

- Part II, Sections 8.1 through 8.7 of Form R
  - Quantity of toxic chemical reported in Sections 8.1 through 8.7 does not include releases (including on-site and off-site disposal) resulting from remedial actions, catastrophic events, or one-time events not associated with production process. These quantities should be reported in Section 8.8 only.

RELEASES

- Section 8.1: Quantity released
  - Quantity of toxic chemical "released"
    - » Definition of release: "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment" (EPCRA §329(8))
      - Includes fugitive and stack air emissions, releases to land, releases to water, underground injections, and on-site and off-site disposal
      - Includes metals in wastes sent to a POTW as treated on-site or off-site (metals cannot be destroyed)

RELEASES

- Section 8.1 (continued)
  - Possible data sources
    - » Data and calculations from Sections 5 and 6 of Form R

ENERGY RECOVERY

- Sections 8.2 and 8.3: On-site and off-site energy recovery
  - Things to remember about energy recovery
    - » Combustion unit (i.e., industrial furnace, industrial kiln, or boiler) must be integrated into an energy recovery system
    - » Section 313 chemical must have a heating value high enough to sustain combustion (e.g., 5,000 BTU/lb.)
    - » Section 313 chemicals that are, or are contained in, commercially available fuels should not be reported as combusted for energy recovery

ENERGY RECOVERY

- **Section 8.2: On-site energy recovery**
  - **Quantity of toxic chemical used for energy recovery on-site**
    - » **Quantity *actually* combusted in the energy recovery unit - *not* the quantity entering the unit**
  - **Possible data sources**
    - » **Engineering process specifications**
    - » **Mass balance calculations**

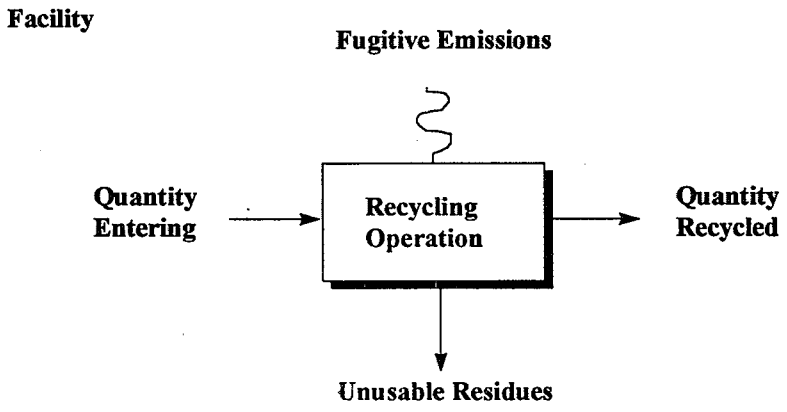
ENERGY RECOVERY

- **Section 8.3: Off-site energy recovery**
  - **Quantity of toxic chemical that is *transferred* off-site for energy recovery**
    - » **Includes total quantity of toxic chemical *transferred* off-site for energy recovery purposes - *not* quantity actually combusted off-site**
  - **Possible data sources**
    - » **Receipts from off-site facilities**
    - » **RCRA hazardous waste manifests**
    - » **Section 6.2 of Form R**

RECYCLING

- **Section 8.4: On-site recycling**
  - **Quantity of toxic chemical recycled <u>on-site</u>**
    - **» Includes total quantity of toxic chemical *recovered* from the recycling process and made available for further use**
  - **Possible data sources**
    - **» Engineering process specifications**
    - **» Mass balance calculations**

CALCULATING QUANTITY RECYCLED IN SECTION 8.4

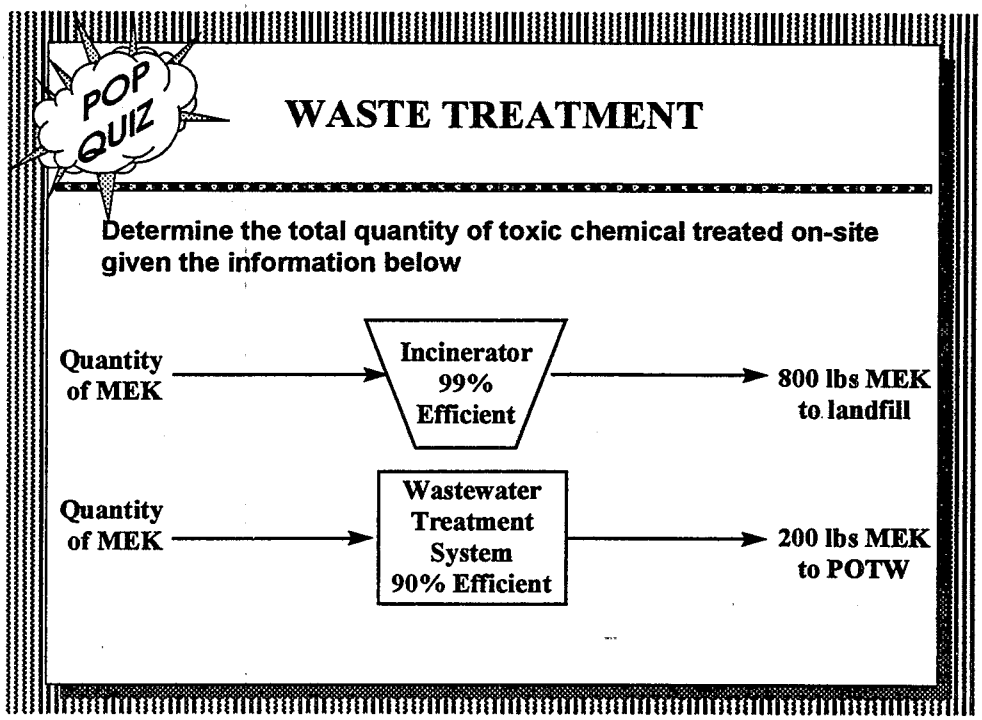


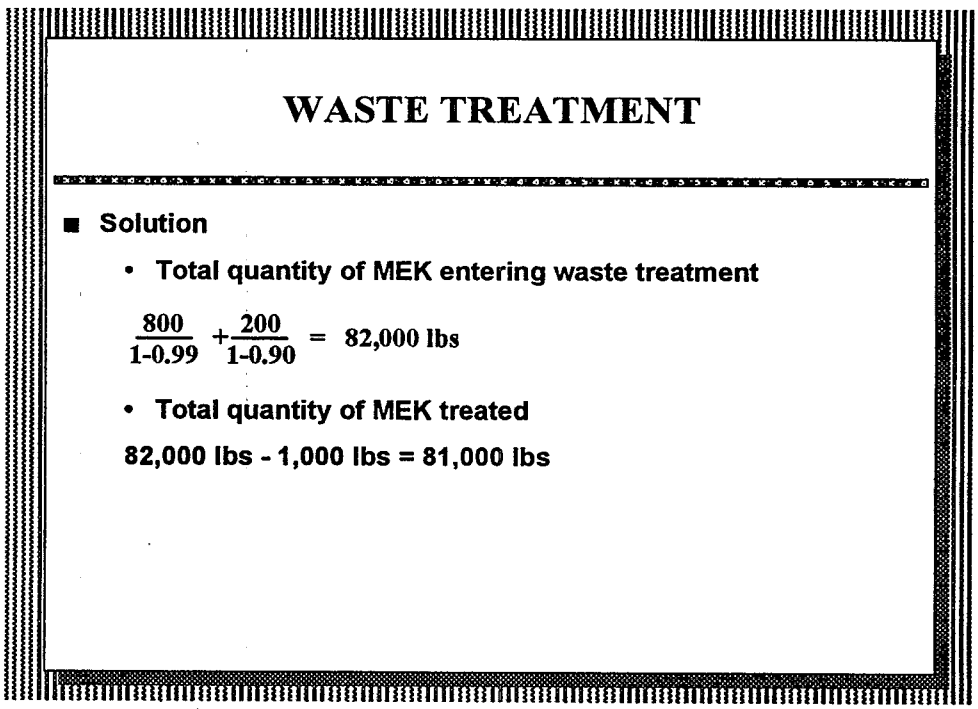
RECYCLING

- Section 8.5: Off-site recycling
  - Quantity of toxic chemical *transferred* off-site for recycling
    - » Includes total quantity of toxic chemical *transferred* to off-site locations for recycling
  - Possible data sources
    - » Receipts from off-site recycling facilities
    - » RCRA hazardous waste manifests
    - » RCRA Hazardous Waste Report
    - » Section 6.2 of Form R

WASTE TREATMENT

- Section 8.6: Quantity treated on-site
  - Quantity of toxic chemical *treated* on-site
    - » Includes all quantities of toxic chemical destroyed
  - Possible data sources
    - » Calculations used to complete Section 7A of Form R
    - » Calculations used to complete Part II, Sections 5 and 6


POP QUIZ
WASTE TREATMENT
Determine the total quantity of toxic chemical treated on-site given the information below
Quantity of MEK
Incinerator 99% Efficient
800 lbs MEK to landfill
Quantity of MEK
Wastewater Treatment System 90% Efficient
200 lbs MEK to POTW


WASTE TREATMENT
Solution
Total quantity of MEK entering waste treatment
800/1-0.99 + 200/1-0.90 = 82,000 lbs
Total quantity of MEK treated
82,000 lbs - 1,000 lbs = 81,000 lbs

WASTE TREATMENT

- Section 8.7: Off-site waste treatment
  - The amount of toxic chemical that is *transferred* off-site for waste treatment
    - » Includes all quantities of toxic chemical *transferred* to off-site facilities for waste treatment
  - Possible data sources
    - » Sections 6.1.A.1 and 6.2.A (i.e., off-site transfers for waste treatment)
      - Important: Assume all Section 6.1.A.1 quantities are treated, except metals

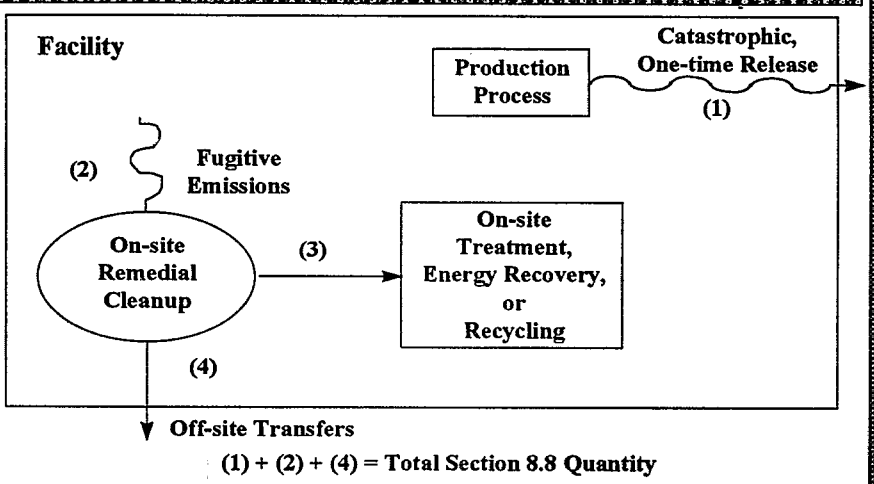
REMEDIAL, CATASTROPHIC, OR ONE-TIME RELEASES

- Section 8.8: Remedial, catastrophic, or one-time releases
  - Quantity of toxic chemical released into the environment or transferred off-site as a result of:
    - » Remediation
    - » Catastrophic events (e.g., earthquake, fire, floods)
    - » One-time events not associated with production processes (e.g., pipe rupture due to unexpected weather)
  - Does not include toxic chemicals treated on-site, recovered, or recycled
  - Excludes quantities in Sections 8.1 through 8.7

REMEDIAL, CATASTROPHIC, OR ONE-TIME RELEASES

- Section 8.8 (continued)
  - Possible data sources
    - » Quantities reported in Part II, Sections 5 and 6
    - » Accident investigation reports
    - » Inventory reconciliation
    - » Mass balance calculations
    - » Monitoring reports (e.g., pH, discharge monitoring reports, continuous emissions monitoring)
    - » CERCLA reports filed with the National Response Center
    - » Release notification reports required under EPCRA section 304

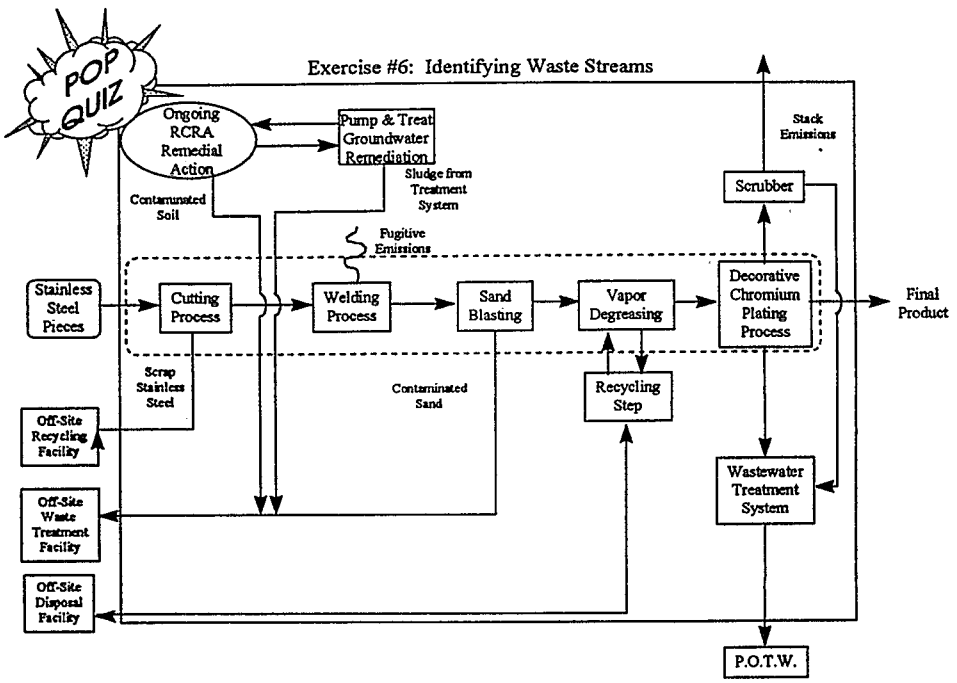
CALCULATING QUANTITY REPORTED IN SECTION 8.8



(1) + (2) + (4) = Total Section 8.8 Quantity

SOURCE REDUCTION AND OTHER WASTE MANAGEMENT ACTIVITIES

- **Important points regarding Sections 8.1 through 8.8**
  - **Sum of the quantities in Sections 8.1 through 8.7 equals the total quantity of the toxic chemical "entering any waste stream (or otherwise released into the environment) prior to recycling, treatment, or disposal." (PPA section 6607(b)(1))**
  - **Quantities reported in Sections 8.1 through 8.7 are exclusive of each other**
  - **Sum of Sections 8.1 through 8.7 is mutually exclusive of the quantity in Section 8.8**



PRODUCTION RATIO OR ACTIVITY INDEX

- **Section 8.9: Production ratio or activity index**
  - **A ratio of production or activity involving the toxic chemical in the reporting year to production or activity in the previous year**
    - » **Allows quantities of the toxic chemical reported in Sections 8.1 through 8.7 in the current year to be compared to quantities reported in the prior year**
    - » **Production ratio or activity index is determined by dividing the level of production (or activity) in the current year by the level of production (or activity) in the prior year**
    - » **Select methodology least likely to be affected by potential source reduction activities**

PRODUCTION RATIO OR ACTIVITY INDEX

- **Possible data sources**
  - **Production reports**
  - **Maintenance records for otherwise used chemicals**
  - **Waste minimization section of the RCRA Hazardous Waste Report**
  - **State/corporate pollution prevention reports**

PRODUCTION RATIO

- Use production ratio if toxic chemical usage is directly proportional to a production level
  - Equation

$$\frac{\text{Quantity of Product: Reporting Year}}{\text{Quantity of Product: Prior Year}}$$

Example:

Aircraft manufacturing

$$\frac{\text{40 aircraft assembled (Current RY)}}{\text{35 aircraft assembled (Prior RY)}} = 1.14$$

ACTIVITY INDEX

- Use activity index if toxic chemical usage is related to an activity at the facility and not to a production level
  - Equation

$$\frac{\text{Level of Activity : Reporting Year}}{\text{Level of Activity: Prior Year}}$$

Example:

Tank Washouts

$$\frac{\text{60 Washouts (Current RY)}}{\text{50 Washouts (Prior RY)}} = 1.2$$

SOURCE REDUCTION ACTIVITIES

- **Section 8.10**
  - **Source reduction practices used with respect to the toxic chemical at the facility and the methods used to identify those activities**
    - » **This section includes only those source reduction activities implemented during the reporting year**
    - » **Only include activities that reduce or eliminate quantities reported in Sections 8.1 through 8.7**

SOURCE REDUCTION ACTIVITIES

- **Section 8.10 (continued)**
  - **Possible data sources**
    - » **Standard operating procedures**
    - » **Process changes or equipment changes (e.g., replacements, adjustments)**
    - » **Raw material changes**
    - » **Work orders for process changes**
    - » **Product redesign specifications**
    - » **Audit reports and follow-up actions**
    - » **Waste minimization section of the RCRA Hazardous Waste Report**
    - » **State/corporate pollution prevention reports**

OPTIONAL INFORMATION

- **Section 8.11**
  - **Facility should indicate whether additional optional information on source reduction, recycling, or pollution control activities is included with the report**
    - **» A one-page summary is encouraged**
  - **Facility can provide information on previous years' activities**

FORM R /FORM A SUBMISSION: GETTING IT RIGHT!

OVERVIEW: FORM R VS. FORM A

- **Form R**
  - Standard Reporting Method
  - Use for all levels of releases
  - Report releases, other waste management, and source reduction activities
  - Recordkeeping Requirements
- **Form A**
  - Alternate Reporting Method
  - Use for low level releases ($\leq$ 500 lbs.)
  - Submit Certification Form
  - Recordkeeping Requirements

ALTERNATIVE THRESHOLD RULE

- EPA published Final Rule (40 CFR 372.27; 59 FR 61501, 11/30/94)
  - Reduced reporting option for low annual reportable amounts
    - » No Form R Report
    - » No release, other waste management, or source reduction reporting
    - » Submit certification form (Form A) each year

ALTERNATIVE THRESHOLD RULE

- Criteria for using alternative threshold
  - Do not exceed 1,000,000 pounds manufactured, processed, or otherwise used, and
  - Do not exceed 500 pounds of a Section 313 chemical as indicated by the sum of Part II, column B, Sections 8.1 through 8.7 of Form R

ALTERNATIVE THRESHOLD RULE

- Recordkeeping required
  - All documentation to support the determination, including:
    - » Inventory, purchasing, and sales records
    - » Release calculations
    - » Waste manifests or receipts
    - » Other waste management data

COMMONLY MADE ERRORS ON FORM R

- Threshold determination errors
- Form R completion errors
- Release estimation errors
- Off-site transfers reporting errors
- Other waste management and source reduction errors
- Federal facility name and/or parent company name errors

EPA United States Environmental Protection Agency

TOXIC CHEMICAL RELEASE INVENTORY FORM A

WHERE TO SEND THIS STATEMENT:
1. EPCRA Reporting Center
P.O. Box 3348
Merrifield, VA 22116-3348
ATTN: TOXIC CHEMICAL RELEASE INVENTORY

2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision ☐

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR

19 ____

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you claiming the toxic chemical identified on page 2 trade secret?
☐ Yes: Answer question 2.2 and attach substantiation forms. ☐ No: Do not answer 2.2; continue with Section 3.

2.2 If you answered yes in 2.1, is this copy: ☐ Sanitized ☐ Unsanitized

SECTION 3. CERTIFICATION (Important: Please read and sign after completing the statement.)

I hereby certify that to the best of my knowledge and belief, for the toxic chemical listed in this statement, the annual reportable amount, as defined in 40 CFR 372.27(a), did not exceed 500 pounds for this reporting year and that the chemical was manufactured, processed, or otherwise used in an amount not exceeding 1 million pounds during this reporting year.

Name and official title of owner/operator or senior management official

Signature | Date Signed

SECTION 4. FACILITY IDENTIFICATION

4.1
Facility or Establishment Name | TRI Facility ID Number
Mailing Address (if different from street address)
City | State | Zip Code
Street Address
City | County | State | Zip Code

4.2 **This report contains information for:**
(Important: check c if applicable; a and b have been intentionally left blank)
c. ☐ A Federal facility

4.3 **Technical Contact** | Name | Telephone Number (Include area code)

EPA United States Environmental Protection Agency

TOXIC CHEMICAL RELEASE INVENTORY FORM A

SECTION 4. FACILITY IDENTIFICATION (Continued)

4.4	Intentionally left blank						
4.5	SIC Code (4-digit)	a.	b.	c.	d.	e.	f.
4.6	Latitude and Longitude	Latitude			Longitude		
		Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

4.7	Dun & Bradstreet Number(s) (9 digits)	a. b.
4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	a. b.
4.9	Facility NPDES Permit Number(s) (9 characters)	a. b.
4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)	a. b.

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company ☐ NA	
5.2	Parent Company's Dun & Bradstreet Number ☐ NA	(9 digits)

PART II. CHEMICAL IDENTIFICATION

SECTION 1. TOXIC CHEMICAL IDENTITY

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete **only** if Part I, Section 2.1 is checked "yes." Generic Name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers,letters, spaces, and punctuation.)

THRESHOLD DETERMINATION ERRORS

- Errors
  - Misinterpreting threshold definitions
  - Ignoring a listed chemical qualifier
  - Misinterpreting an exemption
  - Misclassifying a chemical activity
  - Overlooking a chemical activity
- Results
  - No Form R submitted when one is required
  - Enforcement action may be taken following inspection
  - Federal facility does not meet requirements of EO 12856

FORM R COMPLETION ERRORS

- Errors
  - Incomplete or invalid Form R
  - Incorrect trade secret information
  - Invalid chemical identification on page three
- Result
  - Prevents Form R from being entered into the database
- To avoid these errors, use EPA's Automated Form R software

FORM R COMPLETION ERRORS

- Errors
  - Missing or incorrect reporting year
  - Missing or incorrect data elements
  - Incorrect latitude/longitude coordinates
  - Failing to identify revisions or duplicate submissions
  - Submitting unsigned hardcopy of Form R reports or certification letters for electronic submissions
- Result
  - Delay in processing of Form R

RELEASE ESTIMATION ERRORS

- Errors
  - Incorrectly reporting or identifying fugitive and stack emissions
  - Reporting zero air emissions for VOCs
  - Poor or nonexistent documentation
  - Reporting for the entire waste stream, not just the Section 313 chemical
  - Math errors
- Result
  - Suspect release estimates

OFF-SITE TRANSFER REPORTING ERRORS

- Errors
  - Reporting intrafacility transfers as off-site transfers
  - Identifying waste treatment, disposal, recycling, and energy recovery activities incorrectly
- Results
  - Incorrect estimates (e.g., over-estimates)
  - Misclassification of facility's handling of Section 313 chemicals in wastes

WASTE MANAGEMENT AND SOURCE REDUCTION ERRORS

- Errors in reporting quantity released, Section 8.1
  - Facility excludes off-site disposal quantities (reported in Section 6.2) or on-site releases (reported in Sections 5.1 through 5.5)
  - Facility includes non-production-related, one-time events (e.g., catastrophic or remedial releases/transfers)
    - » Should be reported in Section 8.8

WASTE MANAGEMENT AND SOURCE REDUCTION ERRORS

- Errors in energy recovery reporting, Sections 8.2 and 8.3
  - Reporting energy recovery for substances with little or no heat value (e.g., halons, metals, metal compounds)
  - Reporting incineration activities as energy recovery
    - » Must be integrated into an energy recovery system
- Errors in energy recovery reporting, Section 8.2
  - Inconsistent reporting between Sections 8.2 and 7.B (amount reported but no method identified or vice-versa)
- Errors in energy recovery reporting, Section 8.3
  - Inconsistent reporting between Sections 6.2 and 8.3

WASTE MANAGEMENT AND SOURCE REDUCTION ERRORS

- Errors in on-site recycling reporting, Section 8.4
  - Inconsistent reporting between Sections 8.4 and 7.C (amount reported but no method identified or vice-versa)
  - Reporting amount entering recycling instead of amount recovered
- Errors in off-site recycling reporting, Section 8.5
  - Reporting actual quantity recycled, not quantity sent off-site for purposes of recycling
  - Inconsistent reporting between Sections 6.2 and 8.5

WASTE MANAGEMENT AND SOURCE REDUCTION ERRORS

- Errors in on-site treatment reporting, Section 8.6
  - Reporting total amount entering treatment, not just amount destroyed
  - Over-reporting by including quantity in Section 8.6 and elsewhere (Hint: Sections 8.1 through 8.7 are mutually exclusive)
  - Metals or metal compounds reported as treated on-site

WASTE MANAGEMENT AND SOURCE REDUCTION ERRORS

- Errors in off-site treatment reporting, Section 8.7
  - Inconsistent reporting between Sections 6.2 and 8.7
  - Inconsistent reporting between Sections 6.1 and 8.7
    - » If a quantity is reported as sent to a POTW, it is considered treated off-site and should be reported in Section 8.7 (except for a metal)

WASTE MANAGEMENT AND SOURCE REDUCTION ERRORS

- Errors in reporting catastrophic and remedial releases and transfers, Section 8.8
  - Reporting Section 8.8 quantity in Sections 8.1 through 8.7
  - Not reporting Section 8.8 quantities in Sections 5 and 6 (as appropriate)

FEDERAL FACILITY IDENTIFICATION ERRORS

- Errors
  - Department or agency misidentified
  - Federal facility does not check box c. in Part I, Section 4.2 (or does not enter "F" on the Form R software)
  - GOCO incorrectly identified
  - SIC codes entered in Part I, Section 4.5 do not best describe the facility's activities (e.g., SIC code 9800 series)
- Results
  - Double-counting
  - Form R entered into TRI database improperly

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EPA FORM R

TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

United States Environmental Protection Agency

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

WHERE TO SEND COMPLETED FORMS:

1. EPCRA Reporting Center
P.O. Box 3348
Merrifield, VA 22116-3348
ATTN: TOXIC CHEMICAL RELEASE INVENTORY

2. APPROPRIATE STATE OFFICE
(See instructions in Appendix F)

Enter "X" here if this is a revision: [ ]

For EPA use only

MPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR 19 98

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret? [ ] Yes (Answer question 2.2; Attach substantiation forms) [X] No Do not answer 2.2; go to Section 3	2.2	Is this copy [ ] Sanitized [ ] Unsanitized (Answer only if "YES" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.

SAMPLE FORM R WITH ERRORS

Name and official title of owner/operator or senior management official:	Signature:	Date signed:

SECTION 4. FACILITY IDENTIFICATION

TRI Facility ID Number: 20190WRLSC12034

4.1	Facility or Establishment Name: We Release Company	Facility or Establishment Name or Mailing Address (if different from street address):
	Street: PO Box 313	Mailing Address: NA
	City/County/State/Zip Code: Releaseville/ Formar/ VA/ 20190	City/County/State/Zip Code:

4.2 This report contains Information for: (Important: check a or b; check c if applicable) a. [X] An entire facility b. [ ] Part of a facility c. [ ] A Federal facility

4.3	Technical Contact Name: NA			Telephone Number (include area code):		
4.4	Public Contact Name: John Q. Tactless			Telephone Number (include area code): NA		
4.5	SIC Code (s) (4 digits)	a. 25	b. 1021	c. NA	d.	e.	f.

4.6	Latitude	Degrees: NA	Minutes: 31	Seconds: 17	Longitude	Degrees: N15	Minutes: 11	Seconds: 30

4.7	Dun & Bradstreet Number(s) (9 digits)	4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	4.9	Facility NPDES Permit Number(s) (9 characters)	4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
a.	NA	a.	AKD919762270	a.	NA	a.	NA
b.		b.	20190WRLSC12034	b.		b.	

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	[X] NA	
5.2	Parent Company's Dun & Bradstreet Number	[X] NA	(9 digits)

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER: 20190WRLSC12034

Toxic Chemical, Category, or Generic Name: Xylene

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS NUMBER (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.) 1330-20-7
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.) Xylene
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.) Thin-to-Win Lacquer Thin

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

SUBMIT FORM R WITH ERRORS

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. [X] Produce b. [ ] Import		
If produce or import:		
c. [X] For on-site use/processing	a. [ ] As a reactant	a. [ ] As a chemical processing aid
d. [X] For sale/distribution	b. [ ] As a formulation component	b. [ ] As a manufacturing aid
e. [ ] As a byproduct	c. [ ] As an article component	c. [ ] Ancillary or other use
f. [ ] As an impurity	d. [ ] Repackaging	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	02 (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year)(enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA [X]			
5.2	Stack or point air emissions	NA [ ]	500	E	
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1	River Quai		B		
5.3.2	Burning River		4016 lbs.	O	8%
5.3.3	Lake Anne		0.8		100
5.4.1	Underground Injection on-site to Class I Wells	NA [X]			
5.4.2	Underground Injection on-site to Class II-V Wells	NA [X]			

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 20190WRLSC12034
Toxic Chemical, Category, or Generic Name:

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

		NA	A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)
.5	Disposal to land on-site			
.5.1 A	RCRA Subtitle C landfills	X		
.5.1 B	Other landfills	X		
.5.2	Land treatment/application farming	X		
.5.3	Surface impoundment	X		
.5.4	Other disposal	X		

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)

6.1.A. Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year) (enter range code or estimate)	6.1.A.2 Basis of Estimate (enter code)
4016	

6.1.B. ___ POTW Name	Mukbegon Municipal Treatment						
POTW Address							
City	Mukbegon	State	Wasteaway	County	Formar	Zip	20190
.1.B. ___ POTW Name	NA						
POTW Address							
City		State		County		Zip	

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Section 6.1 page this is here ☐ (example: 1,2,3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2 1 OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)	VAD919762270						
Off-Site Location Name	Jones Treatment Center						
Off-Site Address	999 Jones Rd.						
City	Mukbegon	State	VA	County	Formar	Zip	20190

Is location under control of reporting facility or parent company? ☐ Yes ☐ No

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 20190WRLSC12034
Toxic Chemical, Category, or Generic Name: Xylene

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (continued)

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 10,200	1. M	1.M 24
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

6.2 ___ OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)

Off-Site Location Name: NA

Off-Site Address:

City | State | County | Zip

Is location under control of reporting facility or parent company? ☐ Yes ☐ No

A. Total Transfers (pound/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.M
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

If additional pages of Part II, Section 6.2 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Section 6.2 page this is, here. ☐ (example: 1.2.3. etc.)

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b: 1 P12; 2 P11; 3 P18; 4 P17; 5 P42; 6 P21; 7 P; 8	7A.1c	7A.1d	7A.1e
S		6	75 %	Yes X / No ☐
7A.2a	7A.2b: 1 ~~9X~~ F82; 2 NA; ~~10X~~ A03; ~~11X~~ A06; ~~35X~~ A07; 6 NA; 7; 8	7A.2c	7A.2d	7A.2e
L		2	66 %	Yes ☐ / No ~~XXX~~
7A.3a	7A.3b: 1; 2; 3; 4; 5; 6; 7; 8	7A.3c	7A.3d	7A.3e
			%	Yes ☐ / No ☐
7A.4a	7A.4b: 1; 2; 3; 4; 5; 6; 7; 8	7A.4c	7A.4d	7A.4e
			%	Yes ☐ / No ☐
7A.5a	7A.5b: 1; 2; 3; 4; 5; 6; 7; 8	7A.5c	7A.5d	7A.5e
			%	Yes ☐ / No ☐

Range Codes: A= 1-10 pounds; B=11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 20190WRLSC12034
Toxic Chemical, Category, or Generic Name: mercury

If additional copies of page 4 are attached, indicate the total number of pages in this box [ ] and indicate which page 4 this is, here. [ ] (example: 1,2,3, etc.)

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[ ] Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code (s)]

1	2	3	4
U02	NA		

SECTION 7C. ON-SITE RECYCLING PROCESSES

[ ] Not applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1	2	3	4	5
U11	U12	U13	NA	

6	7	8	9	10

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

	All quantity estimates can be reported using up to two significant figures.	Column A Prior Year (pounds/year)	Column B Current Reporting Year (pounds/year)	Column C Following Year (pounds/year)	Column D Second Following Year (pounds/year)
8.1	Quantity released *	NA	220	15,698	17,582
8.2	Quantity used for energy recovery on-site	2,000	NA		
8.3	Quantity used for energy recovery off-site	NA	NA	NA	NA
8.4	Quantity recycled on-site	500	500	500	500
8.5	Quantity recycled off-site	900	900	900	900
8.6	Quantity treated on-site	9,000	NA	11,400	12,800
8.7	Quantity treated off-site	514	4016	1,000	1,000
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)			0	
8.9	Production ratio or activity index			1.12	

8.10 Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.

	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1	NA	a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

		YES	NO
8.11	Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)	[ ]	[X]

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.

INFORMATION RESOURCES

ADDITIONAL INFORMATION ABOUT TRI

- EPA Regional and State TRI Contacts
  - Check the *Form R and Instructions* booklet
- RCRA, Superfund & EPCRA Hotline

  (800) 424-9346 or (703) 412-9810 (local or international)
  - Regulatory assistance
  - Information on availability of EPA publications
  - Information on EPA's electronic resources

EPA ELECTRONIC MAILING LISTS (LISTSERVER)

- To subscribe to an electronic mailing list (listserver), send e-mail to: listserver@unixmail.rtpnc.epa.gov.
- Subject line: SUBSCRIBE TO LISTSERVERS
- Text: SUBSCRIBE <list name> <first name> <last name>

  SUBSCRIBE EPA-WASTE JOHN SMITH
- Some mailing lists are:
  - EPA-TRI: Toxic Release Inventory Federal Registers
  - HOTLINE_OSWER: RCRA, Superfund & EPCRA Monthly Hotline Report and Updates
  - EPA-PRESS: EPA press releases
  - EPA-MEETING: EPA meeting notification
  - OPPT-NEWSBREAK: OPPT Library daily news service

DOCUMENT DISTRIBUTION CENTERS

RCRA, Superfund & EPCRA Hotline (800) 424-9346 (703) 412-9810 (DC Metro area) Fax (703) 412-3333 http://www.epa.gov/epaoswer/hotline	National Center for Environmental Publications and Information (NCEPI) 1-800-490-9198 http://www.epa.gov/ncepihom/index.html
U.S. Government Printing Office (GPO) (202) 512-1800 Fax: (202) 512-2250 http://www.gpo.gov	National Technical Information Service (NTIS) (800) 553-6847 (703) 605-6000 (DC Metro area) http://www.ntis.gov

PUBLIC ACCESS TO TRI - ONLINE ACCESS

- Right-to-Know Network (RTK NET)
  - Modem: (202) 234-8570; Information: (202) 234-8494; Internet: http://www.rtk.net
- ENVIROFACTS Database Internet Site http://www.epa.gov/enviro/html/ef_home.html
- OPPT - TRI Internet Site http://www.epa.gov/opptintr/tri/
- TOXNET (National Library of Medicine)
  - Modem: (301) 946-1184; Information: (301) 496-6531; Internet: http://www.nlm.nih.gov
  - nominal access charge

PUBLIC ACCESS TO TRI

- TRI User Support Service: (202) 260-1531
- TRI Reports (EPCRA Hotline and EPA TRI Web Site)
  - TRI Public Data Release Annual Report
  - TRI Public Data Release State Fact Sheets
- TRI CD-ROM (GPO/NTIS)
- State Data Diskettes (GPO)

TRI HOMEPAGE

- **EPA Toxic Release Inventory: Community Right to Know Homepage (http://www.epa.gov/opptintr/tri/)**
  - **General information on the TRI program and program development**
  - **Information on how to use the TRI data**
  - **Access to TRI data (e.g., public data release, state fact sheets, links to TRI databases)**
  - **Guidance documents for newly added industries**
  - ***EPCRA Section 313 Questions and Answers Document* (Revised 1997 version)**
  - **Automated Form R Software**

SECTION 313 GENERAL GUIDANCE

- ***Toxic Chemical Release Inventory Reporting Form R and Instructions***
- ***EPCRA Section 313 Questions and Answers (Revised 1997 Version) EPA745-B-97-008***
- ***Common Synonyms***
- ***Consolidated List of Chemicals Subject to Reporting Under the Act (Title III List of Lists)***
  - **Most recent version on Internet: http://www.epa.gov/swercepp/pubs.html**

SECTION 313 TECHNICAL GUIDANCE

- **Industry-Specific Technical Guidance Documents such as:**
  - ***Estimating Chemical Releases From Electroplating Operations***
  - ***Guidance for New Industries***
- **Chemical-Specific Guidance Documents such as:**
  - ***Guidance for Reporting Sulfuric Acid***
  - ***List of Toxic Chemicals within the Glycol Ethers Category***
- ***Estimating Releases and Waste Treatment Efficiencies For the Toxic Chemical Release Inventory Form***

SECTION 313 TECHNICAL GUIDANCE

- **Technology Transfer Network (TTN)**
  - **Help Desk (919) 541-5384**
  - **Internet: http://www.epa.gov/ttn/**
    - ***Compilation of Air Pollutant Emission Factors* (AP-42)**
    - **Water 8/ChemDat 8 programs**
    - **TANKS program**

POLLUTION PREVENTION INFORMATION

- **OPPT Pollution Prevention (P2) Internet Site**
  - **http://www.epa.gov/opptintr/p2home/index.html**
- **Enviroene Information Network**
  - **BBS modem (703) 908-2092; User support (703) 908-2007**
  - **http://es.epa.gov/index.html**
- **Pollution Prevention Information Clearinghouse (PPIC)**
  - **(202) 260-1023**